MSIA

PERSATUAN PENYIASAT TAPAK MALAYSIA

THE MALAYSIAN SITE INVESTIGATORS ASSOCIATION

SCHEDULE OF RATES

2007

Content

124, Jalan Kapar 27/89, Taman Alam Megah, Seksyen 27
40400 Shah Alam, Selangor Darul Ehsan, Malaysia
Tel: 603 5192 8221 Fax: 603 5192 3221
E-mail: tmsia@pd.jaring.my
Website: www.msia.com.my

Message from the President, MSIA

The Malaysian Site Investigators Association (MSIA) was officially registered by the Registrar of Society on 06-03-2000. The objective of the MSIA is to represent, promote and advance the interest, technology and practice of site investigation in Malaysia.

The association through its activities over the last 6 years (2000 to 2006) in training programmes, participation in Construction Industry Development Board (CIDB) National Occupational Skill Standards (NOSS) Development, CIDB Steering Committee for SI Improvement, CIDB Malaysia Standards Committee and joint activities with Institute of Engineers Malaysia (IEM) and Geological Society Malaysia (GSM) has established MSIA as the National body representing Site Investigators in the country.

The main issue at hand is to improve the quality of site investigations amongst members.

We have embarked on a long term plan to achieve this objective with the following:

(1) Participation in the CIDB Development of National Skill Standards (NOSS) for Site Investigation Personnel.

(2) Development of CIDB Training Module for SI Personnel.

(3) Establishment of MSIA Training Centre for the Training of SI Personnel.

(4) Accreditation of SI Personnel by CIDB.

(5) Accreditation of SI Contractors by CIDB.

On 25 April 2006, the CIDB Human Resource Committee (Jawatankuasa Sumber Manusia) approved the National Skill Standards (NOSS) for site investigation personnel, making us the first NOSS Committee in the CIDB to obtain the approval. We are actively involved in the pursuance of the remaining items listed above.

On the short term plan, we will continue with the following activities:

(A) Training of SI personnel by our Training and Publication Working Committee.

(B) Participate in joint Seminars with IEM & GSM.

(C) Participate in CIDB activities related to site investigation.

(D) Impress upon Consultant Engineers to supervise all site investigation projects as they are ultimately professionally liable for the safety and adequacy of constructions which are designed and constructed using the outcomes of site investigations.

(E) Impress upon Members, Consultant Engineers and Employers to encourage good SI practice and emphasis on training for all staff involved with SI.

The product of site investigation is not tangible as compared to other products like food, furniture or electronics where we can compare, examine, test for compliance and finally choose to buy the product. The product of a site investigation is presented in the form of a factual report with data of boreholes consisting of logs, samplings and test results. In the process of gathering data the evidence (samples) are destroyed. While we can duplicate tangible products by thousands or millions, the results of 2 boreholes are not likely to be identical even though they may be just metres apart. Therefore, it is very important that personnel involved in acquiring site and laboratory data are adequately trained, experienced and reasonably paid.

What is the reasonable cost for site investigation works? The current practice is by a tender or quotation process with bids put in by parties rarely pre-qualified for competence, where the lowest tender is normally awarded the job, a common practice in the construction industry. But, site investigation works is not the same with other construction works as the site investigation product or 'Factual Report' can still be contrived with less input or no input at all. Because of this, there are site investigation contractors who tenders very low, well below cost, to get certain jobs which are not expected to be supervised. We must remind users here that with low rates and without proper supervision will likely attract SI contractors with inclinations towards producing 'FICTITIOUS REPORT'.

The only schedule of rates currently referred to is the Public Works Department (JKR) Schedule of Rates for SI works costing less than RM50,000.00 (revision : January 1980) which is outdated. In view of this, the MSIA Business Practice Committee, after 4 years of tedious work finally completed a schedule of rates for site investigation works based on actual cost of establishment, duration, manpower, equipment, consumables and a reasonable profit. The schedule of rates is as shown herein for your reference.

Monetary reward alone does not guarantee you a proper site investigation job, but we believe that you will certainly get one if you adhere to the following:-

(a) Register a pool of credible SI contractors, assess their performance regularly and blacklist non-performers. Report blacklisted SI Contractor to the MSIA for further action.

(b) The Engineer must supervise the SI works (site and laboratory). This is in line with Board of Engineer's Circular No. 4/2005. The Engineer needs to specify and direct the SI to acquire the necessary data he requires to support his engineering design efforts.

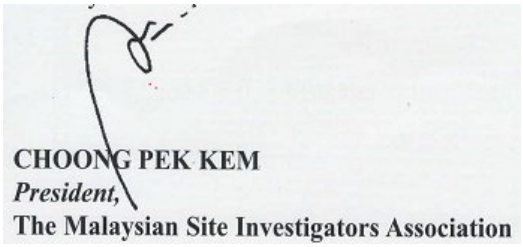
(c) SI contractors must submit field borelogs and laboratory test data regularly to the Engineer.

(d) SI report should include original field and laboratory raw data.

(e) MSIA Schedule of Rates should be used to estimate cost of SI jobs.

On behalf of the Council, may I take this opportunity to thank all Employers of Site Investigation Services, Architects, Engineers, Geologists, Advertisers, Sponsors, Contributors, Business Practice Committee Members and other members for contributing towards the success of the implementation of the MSIA Schedule of Rates.

Thank you.



CHOONG PEK KEM
President,
The Malaysian Site Investigators Association

COUNCIL MEMBERS FOR 2000 / 2001

President	:	Roslan Bin Hassan (Novatel Sdn Bhd)
Vice-President	:	Tung Nai Choy (Sealand Drillers (M) Sdn Bhd)
Secretary	:	Ng Chak Ngoon (Subsurface Engineering Sdn Bhd)
Treasurer	:	Kor Beng (Soils & Foundations Sdn Bhd)
Asst. Secretary	:	Kasliza Binti Kassim (Soil Centralab Sdn Bhd)
Council Members	:	Low Kai Seng (Interfield Sdn Bhd)
		Huong Tuong Ing (Geospec Sdn Bhd)
		Safarudin Bin Mat Tahir (BTS Engineering Sdn Bhd)
		Raghubir Rampal (Constec Sdn Bhd)
		Lee Soon Hing (Inter Soil Engineering Sdn Bhd)

COUNCIL MEMBERS FOR 2001 / 2002

President	:	Roslan Bin Hassan (Novatel Sdn Bhd)
Vice-President	:	Tung Nai Choy (Sealand Drillers (M) Sdn Bhd)
Secretary	:	Ng Chak Ngoon (Subsurface Engineering Sdn Bhd)
Treasurer	:	Chau Yip Kee (Tactcom Engineering Sdn Bhd)
Asst. Secretary	:	Hamidan Bin Mat Wajib (Soil Centralab Sdn Bhd)
Council Members	:	Safarudin Bin Mat Tahir (BTS Engineering Sdn Bhd)
		Wong Kim Yuen (Soilpro Technical Services Sdn Bhd)
		Dr. Ooi LH (Test Technical Laboratory Sdn Bhd)
		Khoo Teng Lye (Master Testing Services Sdn Bhd)
		Choong Pek Kem (Test Sdn Bhd)

COUNCIL MEMBERS FOR 2002 / 2003

President	:	Lee Soon Hing (Inter Soil Engineering Sdn Bhd)
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Secretary	:	Wong Kim Yuen (Soilpro Technical Services Sdn Bhd)
Treasurer	:	William Pang Kong Thean (Global Geotechnics Sdn Bhd)
Asst. Secretary	:	Abdul Rasid Bin Jaapar (Soils & Foundations Sdn Bhd)
Council Members	:	Ng Eng Leong (Gagasan Teguh Sdn Bhd)
		Choong Pek Kem (Test Sdn Bhd)
		Goh Kim Sing (Majumec Bina Sdn Bhd)
		Mohd Fauzi Bin Hassan (Pakatan Tenaga Sdn Bhd)
		Low Kai Seng (Interfield Sdn Bhd)
Past President	:	Roslan Bin Hassan (Novatel Sdn Bhd)

COUNCIL MEMBERS FOR 2003 / 2004

President	:	Tung Nai Choy (Sealand Drillers (M) Sdn Bhd)
Vice-President	:	Ng Chak Ngoon (Subsurface Engineering Sdn Bhd)
Secretary	:	Abdul Rasid Jaapar (Soils & Foundations Sdn Bhd)
Treasurer	:	William Pang Kong Thean (Global Geotechnics Sdn Bhd)
Asst. Secretary	:	Wan Zainuddin Bin Wan Omar (Soil Centralab Sdn Bhd)
Council Members	:	Ng Eng Leong (Gagasan Teguh Sdn Bhd)
		Lim Kim Hock (IES Integrated (M) Sdn Bhd)
		Low Kai Seng (Interfield Sdn Bhd)
		Safarudin Bin Mat Tahir (BTS Engineering Sdn Bhd)
		Yeah Cheng Woh (Strata Drill Sdn Bhd)
Past President	:	Lee Soon Hing (Inter Soil Engineering Sdn Bhd)

COUNCIL MEMBERS FOR 2004 / 2005

President	:	Tung Nai Choy (Sealand Drillers (M) Sdn Bhd)
Vice-President	:	Ng Chak Ngoon (Subsurface Engineering Sdn Bhd)
Secretary	:	Hamidan Bin Mat Wajib (Soil Centralab Sdn Bhd)
Treasurer	:	Safarudin Bin Mat Tahir (BTS Engineering Sdn Bhd)
Asst. Secretary	:	Wan Mohamed Nizam Bin Wan Isa (Team Drillers Sdn Bhd)
Council Members	:	Koo Kean Siang (Geolab (M) Sdn Bhd)
		Chia Kim Seong (Strata Drill Sdn Bhd)
		Khoo Teng Lye (Master Testing Services Sdn Bhd)
		Kim Lin Piew (S & M Geotechnic Sdn Bhd)
		Yong Tai Fatt (Progress Drilling Sdn Bhd)
Past President	:	Lee Soon Hing (Inter Soil Engineering Sdn Bhd)

COUNCIL MEMBERS FOR 2005/ 2006

President	:	Kim Lin Piew (S & M Geotechnic Sdn Bhd)
Vice-President	:	Abdul Rasid Bin Jaapar (Soils & Foundations Sdn Bhd)
Secretary	:	Wan Mohamed Nizam Bin Wan Isa (Team Drillers Sdn Bhd)
Treasurer	:	Yong Tai Fatt (Progress Drilling Sdn Bhd)
Asst. Secretary	:	Koo Kean Siang (Geolab (M) Sdn Bhd)
Council Members	:	Nik Adlin Bin Nik Yusoff (Carita Sdn Bhd)
		Ramachandran (North Soil Engineering Sdn Bhd)
		Lim Kim Hock (IES Integrated (M) Sdn Bhd)
		Stanley Chai Yoon Heng (Geodata Engineering Sdn Bhd)
		Choong Pek Kem (Test Sdn Bhd)
Past President	:	Tung Nai Choy (Sealand Drillers (M) Sdn Bhd)

COUNCIL MEMBERS FOR 2006/ 2007

President	:	Choong Pek Kem (Test Sdn Bhd)
Vice-President	:	Safarudin Bin Mat Tahir (BTS Engineering Sdn Bhd)
Secretary	:	Ng Chak Ngoon (Subsurface Engineering Sdn Bhd)
Treasurer	:	Hamidan Bin Mat Wajib (Soil Centralab Sdn Bhd)
Asst. Secretary	:	Chia Kim Seong (Strata Drill Sdn Bhd)
Council Members	:	Daniel Ng Wai Yoong (Soil Instruments (M) Sdn Bhd)
		Lim Kim Hock (IES Integrated (M) Sdn Bhd)
		Nik Adlin Bin Nik Yusoff (Carita Sdn Bhd)
		William Pang Kong Thean (Global Geotechnics Sdn Bhd)
		Stanley Chai Yoon Heng (Geodata Engineering SB)
Past President		Kim Lin Piew (S & M Geotechnic Sdn Bhd)

BUSINESS PRACTICE WORKING COMMITTEE (BPWC)

Chairman	:	Kim Lin Piew (S & M Geotechnic Sdn Bhd)
Committee Members	:	Yong Tai Fatt (Progress Drilling Sdn Bhd)
		Wong Kim Yuen (Soilpro Technical Services Sdn Bhd)
		David Choong Kwee Kong (Ideal Engineering Laboratory Sdn Bhd)
		Wee Soon Teck (Test Technical Laboratory Sdn Bhd)
		Khoo Teng Lye (Master Testing Services Sdn Bhd)
		Daniel Ng Wai Yoong (Soil Instruments (M) Sdn Bhd)
		Chia Kim Seong (Strata Drill Sdn Bhd)
		Choong Pek Kem (Test Sdn Bhd)

TRAINING & PUBLICATION WORKING COMMITTEE (TPWC)

Chairman	:	Safarudin Bin Mat Tahir (BTS Engineering Sdn Bhd)
Committee Members	:	Hamidan Bin Mat Wajib (Soil Centralab Sdn Bhd)
		Abdul Rasid Bin Jaapar (Soils & Foundations Sdn Bhd)
		AL. Ramanathan (Sealand Drillers (M) Sdn Bhd)
		Wan Mohamed Nizam Bin Wan Isa (Team Drillers Sdn Bhd)
		Yusri Bin Yusof (IES Integrated (M) Sdn Bhd)
		Nik Adlin Bin Nik Yusoff (Carita Sdn Bhd)

GOOD PRACTICE WORKING COMMITTEE (GPWC)

Chairman	:	Ng Chak Ngoon (Subsurface Engineering Sdn Bhd)
Committee Members	:	William Pang Kong Thean (Global Geotechnics Sdn Bhd)
		Lim Kim Hock (IES Integrated (M) Sdn Bhd)
		Lee Soon Hing (Inter Soil Engineering Sdn Bhd)
		Stanley Chai Yoon Heng (Geodata Engineering Sdn Bhd)

THE MALAYSIAN SITE INVESTIGATORS ASSOCIATION
LIST OF ORDINARY MEMBERS

Company Name	Membership No	Representative	Address	Tel	Fax	Email
AGE Engineering	M 0052	V.V. Linggam	No. 89A, Jalan 1/3, Bandar Teknologi Kajang, Section 1, 43000 Kajang, Selangor.	8724 1532	8724 8791	aegvv@tm.net.my
Applied Geotechnics (Sabah) Sdn Bhd	M 0016	Michael Liew	No. 21, Block E, Sri Kemajuan, 6 1/2 Miles, P.O. Box 13881, 88845 Kota Kinabalu, Sabah.	088-428 534	088- 429 249	applygeo@tm.net.my
BTS Engineering Sdn Bhd	M 0009	Safarudin Tahir	No. 42A, Lorong Setia 1, Taman Setia, Jalan Johan Setia, 41200 Klang, Selangor.	5162 5141 / 5162 5153	5162 5226 / 5162 8281	btsesb@streamyx.com
C Phi Engineering Services Sdn Bhd	M 0042	Ahmad Shakiron	No. 2C, Kedai Masjid Al-Faizin, Jalan 16, Desa Jaya, 52100 Kepong, Selangor.	6272 7782	6275 7781	cpes_shake2004@yahoo.com.sg
Carita Sdn Bhd	M 0029	Nik Adlin	No. 3-65-B, Jalan Desa 2/3, Desa Aman Puri, 52100 Kepong, Selangor.	6277 8511	6277 8512	itscari@streamyx.com
City Drill Engineering	M 0043	Wong Kang Wah	No. 12, Jalan 23/26, Taman Sri Rampai, Setapak, 53300 Kuala Lumpur.	4021 4550	4021 4550	City-drill@hotmail.com
Gagasan Teguh Sdn Bhd	M 0022	Ng Eng Leong	No. 6, Jalan Muhibbah 4, Tmn Muhibbah, 43300 Seri Kembangan, Selangor.	8942 5629	8945 5629	gagasan8@streamyx.com
Garuda Geotechnical Testing	M 0048	Supramaniam	No. 12, Jln Kajang Mewah 11, Taman Kajang Mewah, Sg. Chua, 43000 Kajang, Selangor.	8733 7377	8733 7046	garuda96@streamyx.com
Geocrete Laboratory Sdn Bhd	M 0051	Dharam Singh	No. 26, Jalan P2/4, Section 2, Bandar Teknologi Kajang, 43500 Semenyih, Selangor.	8724 2829	8724 2824	dharam@streamyx.com
Geodata Engineering Sdn Bhd	M 0040	Stanley Chai	No. 15-1, Jalan USJ 1/1B, Regalia Business Centre, Tmn Subang Mewah, 47500 Subang Jaya, Selangor.	8023 2782	8023 4081	geodata@tm.net.my
Geolab (M) Sdn Bhd	M 0026	Koo Kean Siang	No. 380, Jalan Simbang, Taman Perling, 81200 Johor Bahru, Johor.	07-236 4932	07-236 4931	tmnetjb@tm.net.my
Geospec Sdn Bhd	M 0021	Huong Tuong Ing	Lot 587-588, 1st Floor, Lorong 2B, Off Jalan Blacksmith, 93100 Kuching, Sarawak.	082-428 695	082-252 516	geospec@streamyx.com
Global Geotechnics Sdn Bhd	M 0028	William Pang	No. 11, Jalan TK 5/42, Kinrara Industrial Park, 13 km, Jalan Puchong, 47100 Selangor.	8075 4623	8075 8161	ggsb3638@streamyx.com
Handalan Enterprise Sdn Bhd	M 0035	Wan Shohairi	No. 1020, Bulatan Sultan Mansor, Jalan Kelantan, 20050 Kuala Terengganu, Terengganu.	09-623 2099	09-622 9905	mts@pd.jaring.my
Ideal Engineering Laboratory Sdn Bhd	M 0019	David Choong	No. 15, Jalan TK 5/42, Kinrara Industrial Park, 13km, Jalan Puchong, 47100 Selangor.	8075 1087	8075 1215	operation@idealenglab.com.my
IES Integrated (M) Sdn Bhd	M 0014	Lim Kim Hock	No. 21-B, Tingkat 1, Jalan 6/4, Taman Commercial Pandan Indah, 55100 Kuala Lumpur.	4296 1010	4293 3011	ies_integrated@yahoo.com
Inter Soil Engineering Sdn Bhd	M 0006	Lee Soon Hing	No. 3-65-B, Jalan Desa 2/3, Desa Aman Puri, 52100 Kepong, Selangor.	6277 8513	6277 8515	itscari@streamyx.com

Company Name	Membership No	Representative	Address	Tel	Fax	Email
Jarabumi Bergabung Sdn Bhd	M 0046	Lu Poi Ek	1st Flr, Lot 6, Block C, Ruang Ridgeview, Phase 10A, Sri Kepayan Commercial Center, 88200 K.K. Sabah.	088-245 993	088-245 293	
Majumec Bina Sdn Bhd	M 0023	Goh Kim Sing	No. 31-2, Jalan Cempaka SD 12/2, Bandar Sri Damansara, 52200 Kuala Lumpur.	6273 1229	6272 9929	gohkimsing1@hotmail.com
Master Testing Services Sdn Bhd	M 0017	Khoo Teng Lye	No. 21, Jalan 2/128, Happy Garden, Jalan Kuchai Lama, 58200 Kuala Lumpur.	7983 6963	7981 4568	mts@pd.jaring.my
Maxi Mekar Sdn Bhd	M 0050	Lee Kan Ching	No. 283B, Jalan Bandar 11, Taman Melawati, 53100 Kuala Lumpur.	4107 4432	4105 7685	leekanching@yahoo.com
Megasoil Engineering Sdn Bhd	M 0044	Lee Yew Kheong	No. 33-2-1, Diamond Square, Block F, Jalan 3/50, Off Jalan Gombak, 53000 Kuala Lumpur.	4021 1990	4021 1966	megasoil@gmail.com
North Soil Engineering (M) Sdn Bhd	M 0041	Ramachandran S.	No. 7-3, Jalan Metro Perdana Barat 1, Taman Usahawan Kepong, Kepong Utara, 52000 KL.	6252 2010	6252 2030	nsengg@streamyx.com
Pacific Geoscience (M) Sdn Bhd	M 0049	Wong Ting Kun	No. 39A, 1st Floor, Jalan USJ 10/1D, UEP Subang Jaya, 47620 Selangor.	5638 2568	5638 2569	info@pacgeo.com.my
Pakatan Geo Service Sdn Bhd	M 0038	Dr. Mohd Azman	No. 6, Jalan Timah 1, Taman Sri Putri, 81300 JB.	07-556 8872	07-557 8787	pgs04@tm.net.my
Pakatan Tenaga Sdn Bhd	M 0024	Mohd Fauzi	Lot 5431, Jalan J9, Fasa 6, Taman Melawati, 53100 Kuala Lumpur.	4107 1135	4105 2054	p_tenaga@streamyx.com
Progress Drilling Sdn Bhd	M 0013	Yong Tai Fatt	No. 283B, Jalan Bandar 11, Taman Melawati, 53100 Kuala Lumpur.	4107 4432	4105 7685	Beryong@pd.jaring.my
Propocon Sdn Bhd	M 0018	Mayallakan P.	No. 55, Jalan Kemboja, Taman Mewah, 31000 Batu Gajah, Perak.	05-366 4682	05-366 6821	propocon@yahoo.com
S & M Geotechnic Sdn Bhd	M 0027	Kim Lin Piew	No. 1, Jalan 7/155, Bukit OUG Industrial Park, 58200 Kuala Lumpur.	7781 7996	7781 8030	smlab@po.jaring.my
Sealand Drillers (M) Sdn Bhd	M 0008	Tung Nai Choy	No. 17A, Jalan Awan Hijau, Taman Overseas Union, 58200 Kuala Lumpur.	7984 7299	7984 7298	sealand@streamyx.com
Sekata Bina Sdn Bhd	M 0039	Ooi Hoow Kiong	No. 2731-B, Jalan Permata 4, Taman Permata, Ulu Klang, 53300 Kuala Lumpur.	4108 3887	4108 9118	sekata1@pd.jaring.my
Soil Centralab Sdn Bhd	M 0004	Zahari Ibrahim	No. 3, Jalan P/8, Kawasan Perindustrian Miel, 43650 Bandar Baru Bangi, Selangor.	8925 9370	8925 9373	zahari_csl@uemnet.com
Soil Instruments (M) Sdn Bhd	M 0037	Daniel Ng	No. 7-3, Jalan PJU 1/41, Dataran Prima, 47301 Petaling Jaya, Selangor.	7804 1782	7804 1763	soilinst@streamyx.com
Soil Mechanic Sdn Bhd	M 0045	Khaw Lai Guan	No. 7, Lrg Talang 1, Prai Garden, 13600 Prai, Penang.	04-390 9279	04-399 1893	soilmech@streamyx.com
Soilpro Technical Services Sdn Bhd	M 0012	Wong Kim Yuen	No. 16, Jalan TIB-1/17, Taman Industri Bolton, 68100 Batu Caves, Selangor.	6188 6975	6185 5903	soilpro@tm.net.my
Soils & Foundations Sdn Bhd	M 0003	Kor Beng	No. 23, Jalan Desa, Taman Desa, Off Jalan Klang Lama, 58100 Kuala Lumpur.	7982 3366	7981 2767	snfsb@streamyx.com
STL Geotechnical Eng. SB.	M 0047	Ho Yaw Ming	P.O. Box 21532, 88773 Luyang, Sabah.	088-715 970	088-720 853	stlgesb@gmail.com
Strata Drill Sdn Bhd	M 0025	Chia Kim Seong	No. 9A, JIn Restu 1, Tmn Restu, 43000 Kajang, Selangor.	8737 5336	8736 3485	strata@streamyx.com

Company Name	Membership No	Representative	Address	Tel	Fax	Email
Subsurface Engineering Sdn Bhd	M 0002	Ng Chak Ngoon	No. 14, Jalan TS 6/4, Taman Industri Subang, 47510 Subang Jaya, Selangor.	5633 2312	5633 2743	sesb1984@yahoo.com
Tactcom Engineering Sdn Bhd	M 0030	Chau Yip Kee	No. 24C, Jln PJS 1/46, Taman Petaling Utama, Bt 7, Jalan Klang Lama, 46000 Petaling Jaya, Selangor.	7783 8420	7783 9766	tactcom@tm.net.my
Team Drillers Sdn Bhd	M 0020	Wan Mohd Nizam	No. 36-B, Jalan SS 22/25, Damansara Jaya, 47400 Petaling Jaya, Selangor.	7729 4261	7729 4261	wannizam@gmail.com
Technic Field Services Sdn Bhd	M 0032	Foo Tian Sang	No. 75, Jalan PSK 10, Pusat Perdagangan Seri Kembangan, 43300 Selangor.	8942 1339	8942 3119	technicfield@yahoo.com
Test Sdn Bhd	M 0034	Choong Pek Kern	Main Office : No. 18, Jln SS 20/10, Damansara Kim, 47400 Petaling Jaya, Selangor. Laboratory: No. 3 & 5, Jalan Anggerik Mokara 31/51,Kota Kemuning, Section 31, 40460 Shah Alam, Selangor.	7728 4927 5122 3688	7727 6015 5121 1688	sectest@po.jaring.my testkk@tm.net.my
Test Technical Laboratory Sdn Bhd	M 0033	Wee Soon Teck	No. 23, Jalan Desa, Taman Desa, Off Jalan Klang Lama, 58100 Kuala Lumpur.	7981 8173	7981 2767	snfsb@streamyx.com
United Soil Sdn Bhd	M 0015	Foo Khee Voon	No. 75, Jalan 2/90, Taman Pertama, 56100 Cheras, Kuala Lumpur.	9284 5007	9284 5711	uniteds@streamyx.com

LIST OF HONORARY MEMBERS

Company Name	Membership No	Representative	Address	Tel	Fax	Email

LIST OF ASSOCIATE MEMBERS

Company Name	Membership No	Representative	Address	Tel	Fax	Email
BW Perunding Sdn Bhd	AM 0005	Chik Hisham	No. 3, Jalan Manau, Off Jalan Kg. Attap, 50460 Kuala Lumpur.	2274 4418	2274 4318	admin@bwp.com.my
CE Instruments Sdn Bhd	AM 0002	Munning J.	No. 29, Block C, Lorong Jugra, Taman Sri Lempah, 3 1/2 Miles, Old Klang Road, 58100 Kuala Lumpur.	7982 8757	7981 3625	ceimj@pc.jaring.my
GDS Instruments Sdn Bhd	AM 0001	Ang Koh An	No. 124, Jalan Kapar 27/89, Section 27, Taman Alam Megah, 40400 Shah Alam, Selangor.	5192 3228	5192 3230	gdsi@tm.net.my
G.E.M. Exploration Sdn Bhd	AM 0004	Geh Poh Khong	No. 11A, Jalan Bunga Tanjung 6A, Taman Putra, 68000 Ampang, Selangor.	4295 2802	4295 3100	gehpk@pc.jaring.my
Soils & Materials Laboratory (M) Sdn Bhd	AM 0007	Marzuki Bakar	No. 1, Jalan 7/155, Bukit OUG Industrial Park, 58200 Kuala Lumpur.	7781 7996	7781 8030	smlab@po.jaring.my
Suretest Instruments Sdn Bhd	AM 0006	Patrick Chua	No. 16D, Block A, United Garden, Jalan Klang Lama, 58200 Kuala Lumpur.	7981 1684	7984 4741	suretest@tm.net.my
YWE Sdn Bhd	AM 0003	Yee Chee Kin	No. 54, Jalan Kilanq Midah, Taman Midah, 56000 KL.	9171 7529	9171 7653	ywe@ywe.com.my

MSIA Participation in CIDB Development of National Skill Standards (NOSS) and Course of Study for SI Personnel

L to R: Ferdaus Bin Ahmad (GSM), Safarudin Bin Mat Tahir, Lee Soon Hing, Kong Chi Liang, Hamidan Bin Mat Wajib, Choong Pek Kem, En. Jamalullil Bin Bidin (CIDB), S. Evali (IKRAM), Kim Lin Piew

Sitting L to R: Choong Pek Kem, Wong Kim Yuan, En. Jamalullil Bin Bidin (CIDB), En. Ramlan Bin Bedin (CIDB), Kim Lin Piew, Safaruddin Bin Mat Tahir

Standing L to R: William Pang Kong Thean, Lim Kim Hock, Hamidan Bin Mat Wajib, Lee Soon Hing *(see note below)*

Sitting L to R: En. Ramlan Bin Bedin (CIDB), En. Mohd Salleh Buyong (CIDB), Ir. Sia Han See (CIDB), En. Jamalullil Bin Bidin (CIDB), Lee Soon Hing

Standing L to R: S. Evali (IKRAM), Wong Kim Yuen, Ng Chak Ngoon, Wee Soon Teck, Tung Nai Choy, Safarudin Bin Mat Tahir, Ferdaus Bin Ahmad (JMG), Choong Pek Kem *(not in the picture Hamidan Bin Mat Wajib)*

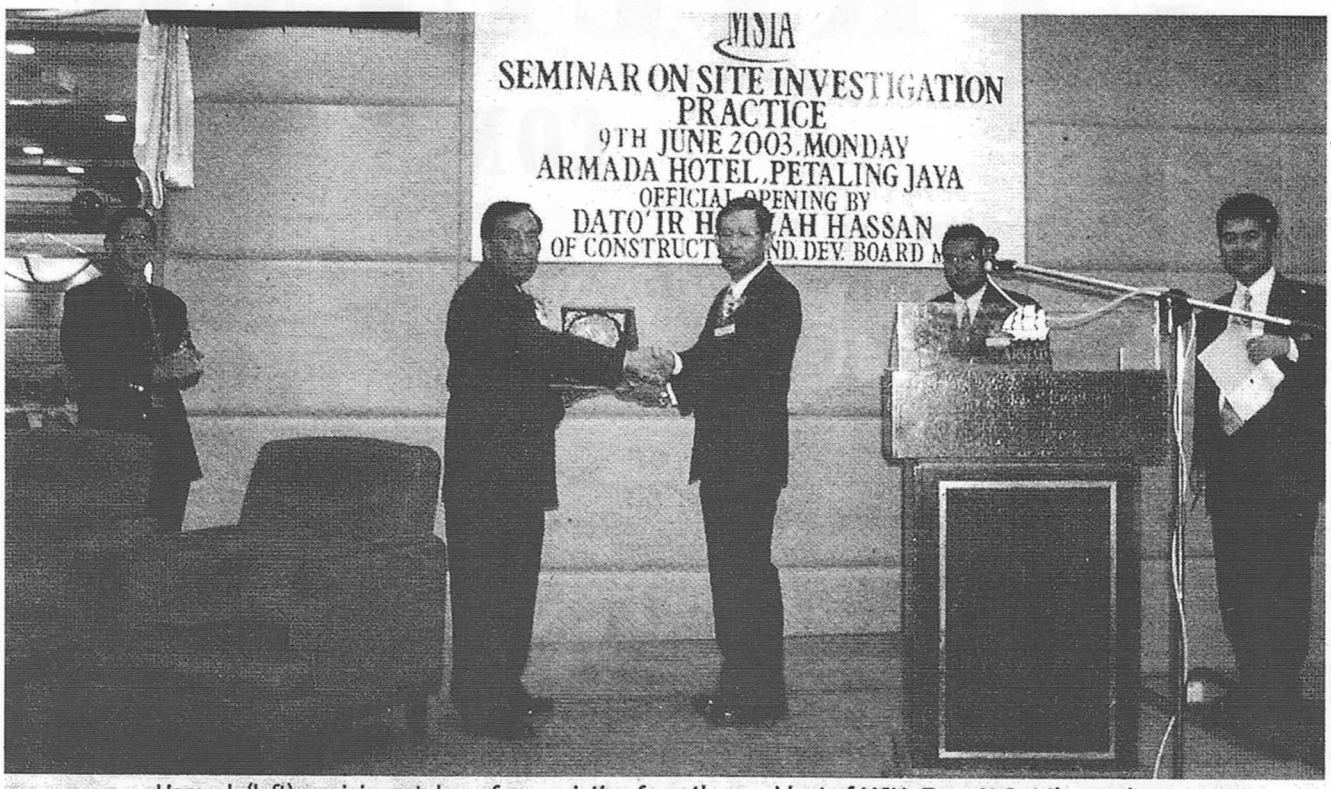
Sitting L to R: En. Mohd Salleh Buyong (CIDB), Choong Pek Kem, Kim Lin Piew, En. Jamalullil Bin Bidin (CIDB)

Standing L to R: S. Evali (IKRAM), Lee Soon Hing, Ferdaus Bin Ahmad (JMG), Wee Soon Teck, Hamidan Bin Mat Wajib, Al Ramanathan a/l Alagappan, Ng Chak Ngoon, Wong Kim Yuen

Note: Not in the picture - Ferdaus Bin Ahmad (JMG), Al Ramanathan all Alagappan, Ng Chak Ngoon, Wee Soon Teck, Steven Chong Fook Loy (LJM), Ooi In Ou & S. Evali (IKRAM)

NOSS Development Sessions	Title	Venue
4-9 July 2005	Job Analysis	Eastin Hotel, PJ
4-7 September 2005	Task Analysis	The City Bayview Hotel, Malacca
26-30 September 2005	Proof Reading, Review & Refine	Eastin Hotel, PJ

Course of Study Development Sessions	Title	Venue
02-06 December 2005	1st Workshop	Grand Seasons Hotel, KL
16-20 February 2006	2nd Workshop	Grand Seasons Hotel, KL
06-10 April 2006	3rd Workshop	Grand Seasons Hotel, KL
28-30 April 2006	Proof Reading, Review & Refine	Vistana Hotel, KL



Hamzah (left) receiving a token of appreciation from the president of MSIA, Tung N.C at the seminar.

Site investigation role in development

By THOMAS HUONG

A SEMINAR on site investigation practice was organised recently by the Malaysian Site Investigators Association (MSIA) at the Armada Hotel in Petaling Jaya.

Officially opened by Datuk Hamzah Hasan, CEO of the Construction Industry Development Board (CIDB), the seminar focused on how site investigation has played an important role in Malaysia's development.

"Safe and cost effective designs and construction of mega infrastructure projects such as the North South Highway and Kuala Lumpur International Airport would not have been possible without proper site investigation," said Hamzah.

He also stressed on the need for a good knowledge and understanding of sub-surface conditions as a prerequisite for site investigation.

"Besides the expertise to design and construct, it is equally important to obtain reliable information of the soil before an optimum solution can be obtained," he said.

However, the seminar also highlighted the fact that site investigations in Malaysia have received unfavourable remarks recently.

Dr Ooi Lean Hock said: "The authorities and the client play a very significant role in the improvement of the quality of site investigation."

He also pointed out that the cost of site investigation is borne by everyone, from property buyers to developers, whether it was carried out or not.

"This cost is included in the building expenditure. The consequential cost without site investigation could be even higher, possibly due to cost overrun, delays and failures," Dr Ooi said.

It was suggested at the seminar that authorities could enforce the relevant standards and allow only accredited personnel to carry out the works.

"In future, only certified site investigation contractors are allowed to carry out the work," Dr Ooi said.

Steps taken so far by CIDB in improving site investigation, with MSIA taking a proactive role, included conducting SI awareness seminars on the preparation of skills standards, code of practice and training modules for the SI industry.

The Malaysian Site Investigators Association (MSIA)

MSIA Schedule Of Rates

Bill No:- 1 : General Condition & Preliminaries

Item	Description of Work	Unit	Unit Rate (RM)
1.0.0	**General Condition and Preliminaries**		
1.0.1	Allow for compliance with the following terms and conditions:- (i) Collection & submission of tender (ii) Inspection of site (iii) Preparation of tender/quotation (iv) Tender interview	Sum	864.00
1.0.2	Allow for compliance with the following:- (i) Comprehend contract requirements (ii) Conduct site evaluation (iii) Plan and organise for mobilisation & demobilisation (iv) Liase with relevant authorities, client & Consultant Engineers (v) Terms of contract and specifications (vi) Prepare and arrange laboratory testing	Sum	1,512.00
1.0.3	Allow for Contractor All Risk Insurance (CAR) :-		
	(i) Sum Insured - RM250,000.00	Sum	750.00
	(ii) Sum Insured - RM500,000.00	Sum	1,500.00
	(iii) Sum Insured - RM1,000,000.00	Sum	3,000.00
1.0.4	Preparation and submission of factual report (6 sets)	Sum	1,296.00
1.0.5	Provide survey for setting out exploration locations and final survey of as built locations	No.	200.00
1.0.6	Extra over item 1.0.5 for survey over water	No.	300.00
1.0.7	Construct Exploration location markers	No.	52.00
1.0.8	Provide full time experienced geologist during site operation to log and describe soil and rock sample	Man/ week	2,592.00
1.0.9	Allow for overtime wages to the Engineer/C.O.W for providing supervision beyond normal working hours	Man/ hour	72.00
1.0.10	To provide 4 wheel drive vehicle up to maximum of 1,600 c.c capacity inclusive of maintainance	veh./ week	1,500.00
1.0.11	To provide and maintain hand phone for the duration of contract	phone/ week	200.00

MSIA Schedule of Rates

Bill No:- 2 : Deep Boring with Boring Plants

Item	Description of Work	Unit	Unit Rate (RM)
2.0.0	**Mobilisation & demobilisation of boring plant**		
	Mobilisation of boring plant and ancillaries to the site and demobilisation upon completion		
2.0.1	Up to 50 Km from Kuala Lumpur	No.	3,030.00
2.0.2	Over 50 Km and up to 125 Km from Kuala Lumpur	No.	3,656.00
2.0.3	Over 125 Km and up to 250 Km from Kuala Lumpur	No.	4,708.00
2.0.4	Over 250 Km and up to 375 Km from Kuala Lumpur	No.	5,560.00
2.0.5	Over 375 Km and up to 500 Km from Kuala Lumpur	No.	6,512.00
2.0.6	Over 500 Km from Kuala Lumpur	No.	7,238.00
2.0.7	Extra over for item 2.01 to 2.06 if top drive boring plant were used.	No.	20,000.00
2.1.0	**Mobilisation and provision of Ancillary plant and material**		
2.1.1	Provision of matting over swampy ground	M	26.00
2.1.2	Provision of staging over swampy ground / shallow water	No.	3,972.00
2.1.3	Provision of drum pontoon over water	No.	5,472.00
2.1.4	Provision of barge / vessel		
2.1.4.1	Mobilisation & Demobilisation of barge / vessel	No.	30,000.00
2.1.4.2	Rental of Barge / vessel	mth	50,000.00
2.1.5	Provision of Tug boat inclusive of fuel	mth	45,000.00
2.1.6	Provision of working boat inclusive of fuel	mth	10,000.00
2.1.7	Provision of small passenger boat inclusive of fuel	mth	8,000.00
2.1.8	Provision of foam drilling equipment i.e. foam pump, air compressor and etc	mth	10,000.00
2.1.9	Provision of Jack-up pontoon		
2.1.9.1	Mobilisation & Demobilisation of jack-up pontoon	No.	10,000.00
2.1.9.2	Rental of jack-up pontoon up to maximum of 15m depth of water	mth.	80,000.00
2.1.10	Provision of excavator for making access inclusive of rental and transportation	mth	20,000.00

Bill No:- 2 : Deep Boring with Boring Plants

Item	Description of Work	Unit	Unit Rate (RM)
2.2.0	**Setting up and shifting of Boring Plant**		
	Move the boring plant to the test position including setting up and dismantling upon completion of borehole where the site is on:-		
2.2.1	**Flat Land**		
2.2.1.1	Distance up to 100 m	No.	339.00
2.2.1.2	Distance over 100 m up to 500 m	No.	452.00
2.2.1.3	Distance over 500 m	No.	678.00
2.2.2	**Undulating Land**		
2.2.2.1	Distance up to 100 m	No.	565.00
2.2.2.2	Distance over 100 m up to 500 m	No.	904.00
2.2.2.3	Distance over 500 m	No.	1,356.00
2.2.3	**On Slope**		
2.2.3.1	Distance up to 100 m	No.	904.00
2.2.3.2	Distance over 100 m up to 500 m	No.	1,356.00
2.2.3.3	Distance over 500 m	No.	1,808.00
2.2.4	**Swampy Ground**		
2.2.4.1	Distance up to 100 m	No.	1,356.00
2.2.4.2	Distance over 100 m up to 500 m	No.	1,808.00
2.2.4.3	Distance over 500 m	No.	2,712.00
2.2.5	**Primary Jungle**		
2.2.5.1	Distance up to 100 m	No.	1,808.00
2.2.5.2	Distance over 100 m up to 500 m	No.	3,616.00
2.2.5.3	Distance over 500 m	No.	7,232.00
2.2.6	**Over Water / Swampy Ground**		
2.2.6.1	with staging	No.	1,808.00
2.2.6.2	with drum pontoon	No.	1,808.00
2.3.0	**Boring in soil**		
2.3.1	Carry out boring in soil whether cased or uncased		
	Rotary Wash Boring (NW size)		
2.3.1.1	Depth from existing ground level not exceeding 10 m	m	28.00
2.3.1.2	--- ditto --- exceeding 10 m but n.e. 20 m	m	34.00
2.3.1.3	--- ditto --- exceeding 20 m but n.e. 30 m	m	40.00
2.3.1.4	--- ditto --- exceeding 30 m but n.e 40 m	m	45.00
2.3.1.5	--- ditto --- exceeding 40 m but n.e 50 m	m	51.00
2.3.2	Carry out boring in soil whether cased or uncased		
	Rotary Wash Boring (HW size)		
2.3.2.1	Depth from existing ground level not exceeding 10 m	m	34.00
2.3.2.2	--- ditto --- exceeding 10 m but n.e. 20 m	m	40.00
2.3.2.3	--- ditto --- exceeding 20 m but n.e. 30 m	m	45.00
2.3.2.4	--- ditto --- exceeding 30 m but n.e 40 m	m	51.00
2.3.2.5	--- ditto --- exceeding 40 m but n.e 50 m	m	57.00
2.3.3	Carry out boring in soil whether cased or uncased		
	Rotary Boring (NW size)		
2.3.3.1	Depth from existing ground level not exceeding 10 m	m	51.00
2.3.3.2	--- ditto --- exceeding 10 m but n.e. 20 m	m	59.00
2.3.3.3	--- ditto --- exceeding 20 m but n.e. 30 m	m	66.00
2.3.3.4	--- ditto --- exceeding 30 m but n.e 40 m	m	73.00
2.3.3.5	--- ditto --- exceeding 40 m but n.e 50 m	m	81.00

MSIA Schedule of Rates

Bill No:- 2 : Deep Boring with Boring Plants

Item	Description of Work	Unit	Unit Rate (RM)
2.3.4	Carry out boring in soil whether cased or uncased		
	Rotary Boring (HW size)		
2.3.4.1	Depth from existing ground level not exceeding 10 m	M	59.00
2.3.4.2	--- ditto --- exceeding 10 m but n.e. 20 m	M	66.00
2.3.4.3	--- ditto --- exceeding 20 m but n.e. 30 m	M	73.00
2.3.4.4	--- ditto --- exceeding 30 m but n.e 40 m	M	81.00
2.3.4.5	--- ditto --- exceeding 40 m but n.e 50 m	M	88.00
2.3.5	Extra over item 2.3.1 to 2.3.4 for foam drilling	M	21.00
2.4.0	**Drilling in rock**		
	Carry out diamond core drilling of 52mm diameter into rock including storing of core samples in standard boxes:-		
2.4.1	Drilling in soft rock (52mm dia./NMLC)		
2.4.1.1	Depth from existing ground level not exceeding 10 m	M	139.00
2.4.1.2	--- ditto --- exceeding 10 m but n.e. 20 m	M	150.00
2.4.1.3	--- ditto --- exceeding 20 m but n.e. 30 m	M	162.00
2.4.1.4	--- ditto --- exceeding 30 m but n.e 40 m	M	173.00
2.4.1.5	--- ditto --- exceeding 40 m but n.e 50 m	M	184.00
2.4.2	Drilling in hard rock (52mm dia./NMLC)		
2.4.2.1	Depth from existing ground level not exceeding 10 m	M	236.00
2.4.2.2	--- ditto --- exceeding 10 m but n.e. 20 m	M	248.00
2.2.4.3	--- ditto --- exceeding 20 m but n.e. 30 m	M	259.00
2.2.4.4	--- ditto --- exceeding 30 m but n.e 40 m	M	270.00
2.2.4.5	--- ditto --- exceeding 40 m but n.e 50 m	M	282.00
2.4.3	Extra over item 2.4.0 if coring is of 63mm diameter(HMLC)	M	83.00
2.4.4	Reaming through rock when encountering cavities/boulders (NW casing)	M	98.00
2.5.0	**In-situ tests**		
2.5.1	Carry out Standard Penetration Test including		
	provision of disturbed samples		
2.5.1.1	Depth from existing ground level not exceeding 10 m	No.	33.00
2.5.1.2	--- ditto --- exceeding 10 m but n.e. 20 m	No.	38.00
2.5.1.3	--- ditto --- exceeding 20 m but n.e. 30 m	No.	44.00
2.5.1.4	--- ditto --- exceeding 30 m but n.e 40 m	No.	49.00
2.5.1.5	--- ditto --- exceeding 40 m but n.e 50 m	No.	55.00
2.5.2	Carry out Acker Vane Shear Test		
2.5.2.1	Depth from existing ground level not exceeding 10 m	No.	34.00
2.5.2.2	--- ditto --- exceeding 10 m but n.e. 20 m	No.	45.00
2.5.2.3	--- ditto --- exceeding 20 m but n.e. 30 m	No.	57.00
2.5.3	Carry out Genor Vane Shear Test		
2.5.3.1	Depth from existing ground level not exceeding 10 m	No.	124.00
2.5.3.2	--- ditto --- exceeding 10 m but n.e. 20 m	No.	136.00
2.5.3.3	--- ditto --- exceeding 20 m but n.e. 30 m	No.	147.00

MSIA Schedule of Rates

Bill No:- 2 : Deep Boring with Boring Plants

Item	Description of Work	Unit	Unit Rate (RM)
2.6.0	**Soil & Water Sampling**		
2.6.1	Obtain undisturbed samples with thin-walled sampler (60mm diameter)		
2.6.1.1	Depth from existing ground level not exceeding 10 m	No.	32.00
2.6.1.2	--- ditto --- exceeding 10 m but n.e. 20 m	No.	39.00
2.6.1.3	--- ditto --- exceeding 20 m but n.e. 30 m	No.	45.00
2.6.1.4	--- ditto --- exceeding 30 m but n.e 40 m	No.	49.00
2.6.1.5	--- ditto --- exceeding 40 m but n.e 50 m	No.	55.00
2.6.2	Extra over 2.6.1 if using 72mm diameter UD tube	No.	25.00
2.6.3	Extra over 2.6.1 if using piston sampler	No	30.00
2.6.4	Carry out Undisturbed 'Mazier' core sampling using 72mm dia. triple tube core barrel with retractable shoe		
2.6.4.1	Depth from existing ground level not exceeding 10 m	No.	117.00
2.6.4.2	--- ditto --- exceeding 10 m but n.e. 20 m	No.	134.00
2.6.4.3	--- ditto --- exceeding 20 m but n.e. 30 m	No.	150.00
2.6.4.4	--- ditto --- exceeding 30 m but n.e 40 m	No.	166.00
2.6.4.5	--- ditto --- exceeding 40 m but n.e 50 m	No.	183.00
2.6.5	Collect 1 litre of water sample	No.	28.00
2.7.0	**Other In-Borehole Tests**		
2.7.1	Standpipe		
2.7.1.1	Supply & install slotted PVC standpipe in borehole	No	379.00
2.7.1.2	Supply & install PVC pipe up to 10 M depth	M	27.00
2.7.1.3	Supply & install PVC pipe exceeding 10 M depth	M	33.00
2.7.2	Standpipe Piezometer		
2.7.2.1	Supply & install piezometer tip in borehole	No	542.00
2.7.2.2	Supply & install PVC pipe up to 10 M depth	M	27.00
2.7.2.3	Supply & install PVC pipe exceeding 10 M depth	M	33.00
2.7.2.4	Supply & install protective cover	No.	333.00
2.7.3	Monitoring of water level in standpipe/standpipe piezometer after completion of field work	Trip	904.00
2.7.4	Permeability test		
2.7.4.1	Setting up and preparation of equipment	No.	565.00
2.7.4.2	Carry out constant head permeability test in borehole	No.	509.00
2.7.4.3	Carry out variable head permeability test in borehole	No.	339.00
2.7.4.4	Carry out single packer test in rock formation	No.	904.00
2.7.5	Carry out ground water level observation in borehole	No.	85.00

MSIA Schedule of Rates

Bill No:- 3 : Cone Penetration Test

Item	Description of Work	Unit	Unit Rate (RM)
3.1.0	**MOBILISATION & DEMOBILISATION OF 10 TON DEEP SOUNDING/PIEZOCONE**		
3.1.1	Mobilisation of deep sounding plant / piezocone and ancillaries to the site and demobilisation upon completion		
3.1.1.1	Distance up to 50 Km	Sum	2,140.00
3.1.1.2	Distance over 50 Km up to 250 Km	Sum	3,266.00
3.1.1.3	Distance over 250 Km up to 500 Km	Sum	4,506.00
3.1.1.4	Distance over 500 Km	Sum	5,319.00
3.2.0	**MOBILISATION & DEMOBILISATION OF 20 TON DEEP SOUNDING/PIEZOCONE**		
3.2.1	Mobilisation of deep sounding plant / piezocone and ancillaries to the site and demobilisation upon completion		
3.2.1.1	Distance up to 50 Km	Sum	4,826.00
3.2.1.2	Distance over 50 Km up to 250 Km	Sum	6,298.00
3.2.1.3	Distance over 250 Km up to 500 Km	Sum	8,243.00
3.2.1.4	Distance over 500 Km	Sum	8,979.00
3.3.0	**Setting Up Mechanical Deep Sounding Plant**		
3.3.1	Setting up of sounding plant at test location including dismantling it at the old position and erecting it at new position which is on land.	No.	426.00
3.3.2	--- Ditto --- but over swampy ground including the provision of staging and/or matting	No.	1,706.00
3.3.4	To provide temporary access by using excavator	Week	6,000.00
3.4.0	**Mechanical Cone Penetration Test**		
3.4.1	Carry out mechanical cone penetration test		
3.4.1.1	Depth from existing ground level n.e (n.e) 10m	M	21.00
3.4.1.2	--- ditto --- exceeding 10m but n.e 20m	M	25.00
3.4.1.3	--- ditto --- exceeding 20m but n.e 30m	M	28.00
3.4.1.4	--- ditto --- exceeding 30m but n.e 40m	M	31.00
3.4.1.5	--- ditto --- exceeding 40m but n.e 50m	M	33.00
3.5.0	**Setting Up Electrical Deep Sounding Plant (Piezocone)**		
3.5.1	Setting up of piezocone at testing location including dismantling it at the old position and erecting it at the new position which is on land	No.	708.00
3.5.2	--- Ditto --- but over swampy ground including the provision of staging and/or matting	No.	2,361.00
3.5.3	To provide temporary access by using excavator	Week	6,000.00

MSIA Schedule of Rates

Bill No:- 3 : Cone Penetration Test

Item	Description of Work	Unit	Unit Rate (RM)
3.6.0	**Electrical Cone Penetration Test (Piezocone)**		
3.6.1	Carry out electrical cone penetration test		
3.6.1.2	Depth from existing ground level ot exceeding (n.e)10m	M	31.00
	--- ditto --- exceeding 10m but n.e 20m	M	35.00
	--- ditto --- exceeding 20m but n.e 30m	M	40.00
	--- ditto --- exceeding 30m but n.e 40m	M	45.00
	--- ditto --- exceeding 40m but n.e 50m	M	50.00
3.7.0	**Dissipation Test**		
3.7.1.1	Carry out dissipation test up to maximum of 1 hour	No.	177.00
3.7.1.2	Subsequent dissipation test	Hr.	118.00

MSIA Schedule of Rates

Bill No:- 4 : Other Field Tests

Item	Description of Work	Unit	Unit Rate (RM)
4.0.0	**Other Field Tests**		
4.1.0	**Mackintosh Probe Test**		
4.1.1	Mobilisation of personnel and equipment to site and demobilisation upon completion.		
4.1.1.1	Distance up to 50 Km	Sum	517.00
4.1.1.2	Distance over 50 Km up to 250 Km	Sum	794.00
4.1.1.3	Distance over 250 Km up to 500 Km	Sum	1,072.00
4.1.1.4	Distance over 500 Km	Sum	1,210.00
4.1.2	Carry out Mackintosh or JKR Probe test to depth no exceeding 15m below ground level or 400 blows per 0.30m penetration whichever achieved first	No.	139.00
4.2.0	**Hand Auger Boring**		
4.2.1	Mobilisation of personnel and equipment to site and demobilisation upon completion.		
4.2.1.1	Distance up to 50 Km	Sum	517.00
4.2.1.2	Distance over 50 Km up to 250 Km	Sum	794.00
4.2.1.3	Distance over 250 Km up to 500 Km	Sum	1,072.00
4.2.1.4	Distance over 500 Km	Sum	1,210.00
4.2.2	Carry out hand auger boring including provision of disturbed samples		
4.2.2.1	Depth from existing ground level not exceeding 2.5m	M	35.00
4.2.2.2	--- ditto --- exceeding 2.5m but n.e 5.0m	M	42.00
4.2.2.3	--- ditto --- exceeding 5.0m but n.e 7.5m	M	49.00
4.2.3	Obtain undisturbed sample using thin - walled tube sampler (60mm dia.) from bored hole		
4.2.3.1	Depth from existing ground level not exceeding 2.5m	No.	29.00
4.2.3.2	--- ditto --- exceeding 2.5m but n.e 5.0m	No.	33.00
4.2.3.3	--- ditto --- exceeding 5.0m but n.e 7.5m	No.	36.00
4.3.0	**Trial Pit**		
4.3.1	Mobilisation of personnel and equipment to site and demobilisation upon completion.		
4.3.1.1	Distance up to 50 Km	Sum	517.00
4.3.1.2	Distance over 50 Km up to 250 Km	Sum	794.00
4.3.1.3	Distance over 250 Km up to 500 Km	Sum	1,072.00
4.3.1.4	Distance over 500 Km	Sum	1,210.00
4.3.2	Carry out trial pit excavation and backfilling of pit size 2m X 2m X 2m inclusive of small disturbed sample	No	259.00
4.3.3	Mapping and logging of pit faces	No.	104.00
4.3.4	Provision of shoring and dewatering	No.	1,000.00
4.3.5	Obtain bulk sample not exceeding 50kg	No.	65.00
4.3.6	Obtain 300mm X 300mm block sample	No.	124.00

MSIA Schedule of Rates

Bill No:- 4 : Other Field Tests

Item	Description of Work	Unit	Unit Rate (RM)
4.4.0	**Penetration Vane Shear Test**		
4.4.1	Mobilisation of personnel and equipment to site and demobilisation upon completion.		
4.4.1.1	Distance up to 50 Km	Sum	947.00
4.4.1.2	Distance over 50 Km up to 250 Km	Sum	1,334.00
4.4.1.3	Distance over 250 Km up to 500 Km	Sum	1,721.00
4.4.1.4	Distance over 500 Km	Sum	1,915.00
4.4.2	Setting up, dismantling and shifting of vane shear equipment	No.	145.00
4.4.3	Advance penetration field vane into soft soil		
4.4.3.1	Depth from existing ground not exceeding 10m	M	22.00
4.4.3.2	--- ditto --- exceeding 10m but n.e 20m	M	25.00
4.4.3.3	--- ditto --- exceeding 20m but n.e 30m	M	28.00
4.4.4	Carry out vane shear test		
4.4.4.1	Depth from existing ground not exceeding 10m	No.	58.00
4.4.4.2	--- ditto --- exceeding 10m but n.e 20m	No.	68.00
4.4.4.3	--- ditto --- exceeding 20m but n.e 30m	No.	77.00
4.5.0	**Plate Loading Test**		
4.5.1	Mobilisation of personnel and equipment and kentledge load to site and demobilisation upon completion		
4.5.1.1	Distance up to 50 Km	Sum	5,894.00
4.5.1.2	Distance over 50 Km up to 250 Km	Sum	7,228.00
4.5.1.3	Distance over 250 Km up to 500 Km	Sum	8,562.00
4.5.1.4	Distance over 500 Km	Sum	9,729.00
4.5.2	Setting up kentledge load up to 30 kN load inclusive of transport and crane charges	No.	1,834.00
4.5.3	Carry out 2 cycle plate load test using 300mm dia.plate Up to maximum load of 30kN force	No.	1,336.00
4.6.0	**Insitu California Bearing Ratio Tests**		
4.6.1	Mobilisation of personnel, equipment to site and demobilisation upon completion.		
4.6.1.1	Distance up to 50 Km	Sum	492.00
4.6.1.2	Distance over 50 Km up to 250 Km	Sum	744.00
4.6.1.3	Distance over 250 Km up to 500 Km	Sum	995.00
4.6.1.4	Distance over 500 Km	Sum	1,121.00
4.6.2	Provision of reacting load (lorry) Up to 3 tonnes	Day	863.00
4.6.3	Carry out Insitu California Bearing Ratio Test (Test 4.3 Part 9 : BS 1377 : 1990)	No.	94.00

MSIA Schedule of Rates

Bill No:- 4 : Other Field Tests

Item	Description of Work	Unit	Unit Rate (RM)
4.7.0	**Field Density Test**		
4.7.1	Mobilisation of personnel and equipment to site and demobilisation upon completion.		
4.7.1.1	Distance up to 50 Km	Sum	492.00
4.7.1.2	Distance over 50 Km up to 250 Km	Sum	744.00
4.7.1.3	Distance over 250 Km up to 500 Km	Sum	995.00
4.7.1.4	Distance over 500 Km	Sum	1,121.00
4.7.2	Carry out Field Density Tests		
4.7.2.1	Sand replacement method (Small Pouring Cylinder Method) (Test 2.1 Part 9: BS 1377 : 1990)	No.	65.00
4.7.2.2	Sand replacement method (Large Pouring Cylinder Method) (Test 2.2 Part 9 : BS 1377 : 1990)	No.	89.00
4.7.2.3	Core cutter method (Test 2.4 Part 9 : BS 1377 : 1990)	No.	63.00
4.8.0	**Dynamic Cone Penetration Test (DCP)**		
4.8.1	Mobilisation of personnel and equipment to site and demobilisation upon completion.		
4.8.1.1	Distance up to 50 Km	Sum	492.00
4.8.1.2	Distance over 50 Km up to 250 Km	Sum	744.00
4.8.1.3	Distance over 250 Km up to 500 Km	Sum	995.00
4.8.1.4	Distance over 500 Km	Sum	1,121.00
4.8.2	Carry out 150mm diameter pavement coring	No.	78.00
4.8.3	Dynamic cone Penetration Test in pavement cored hole through the base course (crusher run), sub-base and sub-grade up to 1.2 m below the road surface	No.	94.00
4.8.4	Re-instate cored hole with bituminous premix or approved material	No.	39.00

MSIA Schedule of Rates

Bill No:- 5 : Laboratory Tests

Item	Description of Work	Unit	Unit Rate (RM)
5.1.0	**Classification Tests**		
5.1.1	Moisture Content	No.	3.00
5.1.2	Atterberg Limits		
5.1.2.1	Liquid Limit / Cone-four point method	No.	22.00
5.1.2.2	Liquid Limit / Cone-one point method	No.	7.00
5.1.2.3	Liquid Limit / Casagrande-four point method	No.	22.00
5.1.2.4	Liquid Limit / Casagrande-one point method	No.	7.00
5.1.2.5	Plastic Limit	No.	17.00
5.1.2.6	Plasticity Index - derivation	No.	2.00
5.1.3	Linear Shrinkage	No.	15.00
5.1.4	Bulk Density		
5.1.4.1	Linear measurement	No.	11.00
5.1.4.2	Immersion in water	No.	44.00
5.1.4.3	Water displacement	No.	44.00
5.1.5	Particle Density (specific gravity)		
5.1.5.1	Gas Jar	No.	88.00
5.1.5.2	Small pyknometer	No.	31.00
5.1.6	Particle Size Distribution		
5.1.6.1	Coarse grained	No.	22.00
5.1.6.2	Fine grained - pipette	No.	132.00
5.1.6.3	Fine grained - hydrometer	No.	36.00
5.1.6.4	Disperson - double hydrometer	No.	66.00
5.1.7	Soil Classification Group Index		
5.1.7.1	BS 5930 : 1999	No.	10.00
5.1.8	Samples Logging and record		
5.1.8.1	Split UD, photograph and logging	No.	176.00
5.1.8.2	Provide small record samples	No.	15.00
5.2.0	**Compaction-related Tests**		
5.2.1	2.5 kg rammer (DD vs MC)		
5.2.1.1	1.0 Litre mould - 1 specimen	No.	66.00
5.2.1.2	2.3 Litre CBR mould - 1 specimen	No.	88.00
5.2.1.3	1 Litre mould - 5 specimens	Series	352.00
5.2.1.4	2.3 Litre CBR mould - 5 specimen	Series	440.00
5.2.1.5	CBR, unsoaked - 1 specimen	No.	132.00
5.2.1.6	CBR, soaked 4 days - 1 specimen	No.	154.00
5.2.1.7	CBR, top unsoaked and bottom soaked 4 days - 1 specimen	No.	154.00
5.2.1.8	CBR, unsoaked - 5 specimens	Series	484.00
5.2.1.9	CBR, soaked 4 days - 5 specimens	Series	572.00
5.2.1.10	CBR, top unsoaked and bottom soaked 4 days - 5 specimen	Series	572.00
5.2.2	4.5 kg rammer (DD vs MC)		
5.2.2.1	1.0 Litre mould - 1 specimen	No.	88.00
5.2.2.2	2.3 Litre CBR mould - 1 specimen	No.	110.00
5.2.2.3	1 Litre mould - 5 specimens	Series	352.00
5.2.2.4	2.3 Litre CBR mould - 5 specimen	Series	440.00
5.2.2.5	CBR, unsoaked - 1 specimen	No.	154.00

MSIA Schedule of Rates

Bill No:- 5 : Laboratory Tests

Item	Description of Work	Unit	Unit Rate (RM)
5.2.2.6	CBR, soaked 4 days - 1 specimen	No.	176.00
5.2.2.7	CBR, top unsoaked and bottom soaked 4 days - 1 specimen	No.	176.00
5.2.2.8	CBR, unsoaked - 5 specimens	Series	506.00
5.2.2.9	CBR, soaked 4 days - 5 specimen	Series	594.00
5.2.2.10	CBR, top unsoaked and bottom soaked 4 days - 5 specimen	Series	594.00
5.2.2.11	Vibrating Hammer	Series	395.00
5.3.0	**Total Stress Tests**		
5.3.1	Unconfined compression strength		
5.3.1.1	38mm diameter, 1 specimen	No.	33.00
5.3.1.2	50mm diameter, 1 specimen	No.	44.00
5.3.1.3	70/72mm diameter, 1 specimens	No.	53.00
5.3.1.4	38mm diameter, 3 specimen	Set	62.00
5.3.1.5	50mm diameter, 3 specimen	Set	121.00
5.3.1.6	70/72mm diameter, 3 specimens	Set	150.00
5.3.2	UU Triaxial without pwp		
5.3.2.1	38mm diameter, 1 specimen	No.	44.00
5.3.2.2	50mm diameter, 1 specimen	No.	53.00
5.3.2.3	70/72mm diameter, 1 specimen	No.	62.00
5.3.2.4	38mm diameter, 3 specimens	Series	121.00
5.3.2.5	50mm diameter, 3 specimens	Series	150.00
5.3.2.6	70/72mm diameter, 3 specimens	Series	176.00
5.3.3	Remoulding specimens for Items No. 5.3.1 or 5.3.2		
5.3.3.1	At received moisture content	No.	44.00
5.3.3.2	At specified moisture content	No.	88.00
5.3.3.3	At received moisture content	Set	132.00
5.3.3.4	At specified moisture content	Set	264.00
5.3.4	UU Triaxial With PWP		
5.3.4.1	38mm diameter - 3 specimens	Series	394.00
5.3.4.2	50mm diameter - 3 specimens	Series	457.00
5.3.4.3	70/72mm diameter - 3 specimens	Series	520.00
5.3.5	Consolidated Undrained Triaxial up to 3 days		
5.3.5.1	38mm diameter - 3 specimens	Series	583.00
5.3.5.2	50mm diameter - 3 specimens	Series	898.00
5.3.5.3	70/72mm diameter - 3 specimens	Series	1,087.00
5.3.5.4	Additional day to item 5.3.5	Day	315.00
5.3.6	Consolidated Drained Triaxial up to 4 days		
5.3.6.1	38mm diameter - 3 specimens	Series	1,040.00
5.3.6.2	50mm diameter - 3 specimens	Series	1,244.00
5.3.6.3	70/72mm diameter - 3 specimens	Series	1,544.00
5.3.6.4	Additional day to item 5.3.6	Day	315.00
5.3.7	Remoulding Specimens		
5.3.7.1	At received Moisture Content - 1 specimen	No	44.00
5.3.7.2	At received Moisture Content - 1 specimen	No	88.00
5.3.7.3	At received Moisture Content - 3 specimen	Set	132.00
5.3.7.4	At received Moisture Content - 3 specimen	Set	264.00

MSIA Schedule of Rates

Bill No:- 5 : Laboratory Tests

Item	Description of Work	Unit	Unit Rate (RM)
5.3.8	Direct Shear Test - 60mm Shear Box		
5.3.8.1	Unconsolidated Undrained (UU)	Series	254.00
5.3.8.2	Consolidated Undrained (CU)	Series	308.00
5.3.8.3	Consolidated Drained (CD)	Series	508.00
5.3.9	Direct Shear Test - 100mm Shear Box		
5.3.9.1	Unconsolidated Undrained (UU)	Series	762.00
5.3.9.2	Consolidated Undrained (CU)	Series	816.00
5.3.9.4	Consolidated Drained (CD)	Series	923.00
5.3.10	Direct Shear Test - 300mm Shear Box		
5.3.10.1	Unconsolidated Undrained (UU)	Series	1,017.00
5.3.10.2	Consolidated Undrained (CU)	Series	1,070.00
5.3.10.3	Consolidated Drained (CD)	Series	1,525.00
5.3.11	Remoulding Specimens		
5.3.11.1	At received Moisture Content - 3 specimen	Set	132.00
5.3.11.2	At received Moisture Content - 3 specimen	Set	264.00
5.4.0	**Compressibility Tests**		
5.4.1	Oedometer Consolidation		
5.4.1.1	6 loadings and 3 unloadings	No.	297.00
5.4.1.2	Swelling pressure determination	No.	244.00
5.4.1.3	Measurement of swelling	No.	427.00
5.4.1.4	Settlement on saturation	No.	854.00
5.4.1.5	Additional loading to Item 5.4.1.1		
	(coefficient of secondary consolidation)	Day	33.00
5.4.2	Remould specimen for Item 5.4.1.1		
5.4.2.1	At received moisture content	No.	44.00
5.4.2.2	At specified moisture content	No.	88.00
5.5.0	**Other Total Stress Test**		
5.5.1	Hand vane shear, pilcon	No.	22.00
5.5.2	Pocket penetrometer	No.	22.00
5.6.0	**Permeability Tests**		
5.6.1	Constant Head Method	No.	305.00
5.6.2	Falling Head Method- Head, Vol. 2	No.	305.00
5.7.0	**Rock Core Tests**		
5.7.1	Core Compressive Strength	No	154.00
5.7.2	--- Ditto --- with Young Modulus	No	254.00
5.7.3	--- Ditto --- with Young Modulus & Poisson Ratio	No	361.00
5.7.4	Point Load Test	No	99.00
5.8.0	**Chemical Tests - Soil/Water**		
5.8.1	Organic Matter	No	55.00
5.8.2	Total/Soluble Suphate	No	55.00
5.8.3	Chloride Content	No	55.00
5.8.4	pH Value	No	33.00