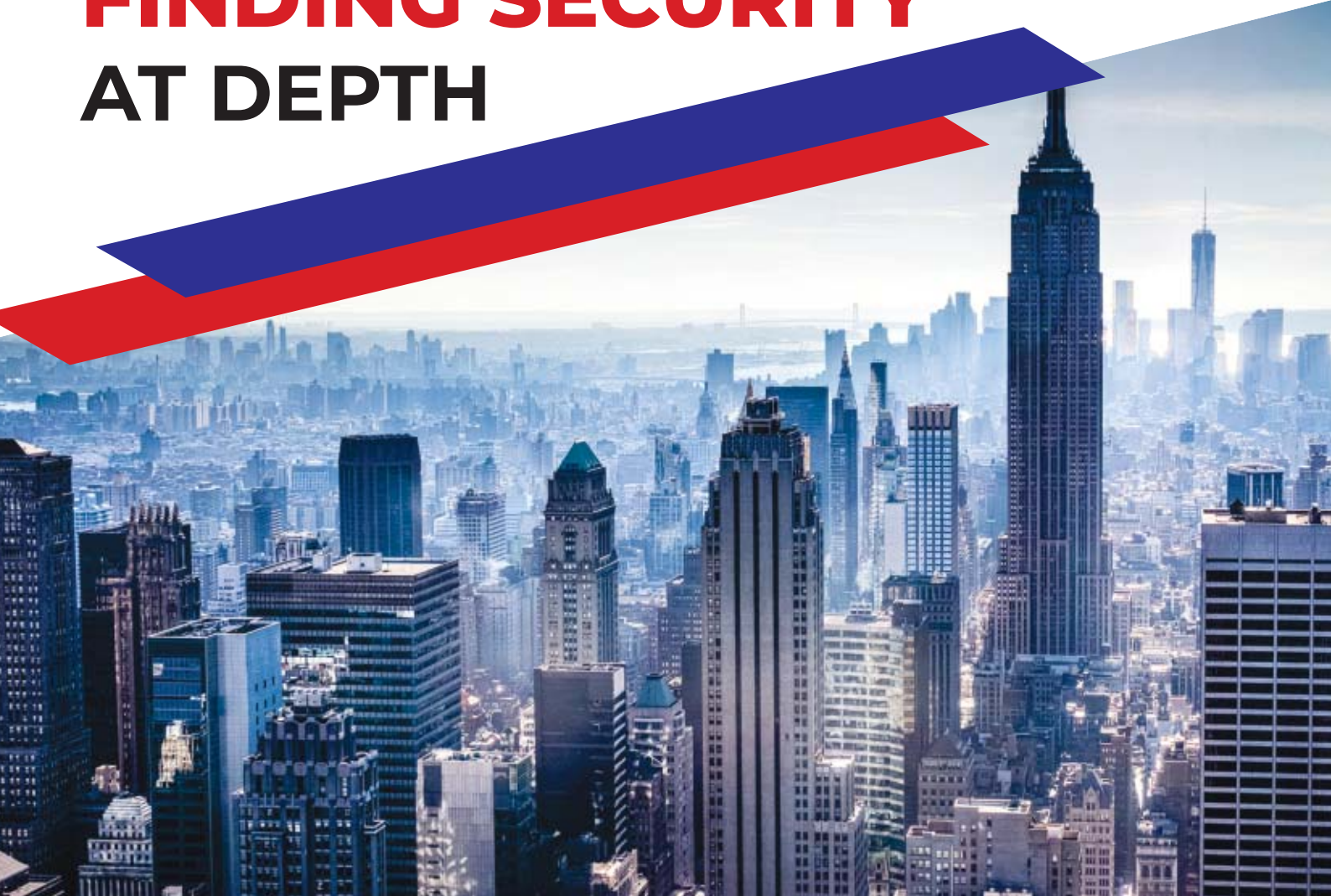




**GEOSCIENCE PILE TEST**

Finding Security at Depth

# FINDING SECURITY AT DEPTH



The leading service provider of Deep Foundation Testing, Analysis and consulting services in Pakistan. Geoscience Pile Test is committed to maintain highest standards of quality, responsiveness and professional ethics in providing its testing services across Pakistan.





The leading service provider of Deep Foundation Testing, Analysis and Consulting Services in Pakistan.

We are technically backed by the world leading Companies like Pile **GRL Engineer's Incorporation-USA** and **Pile Test-UK**.

**“The only Company in Pakistan having Pile Test UK Certified in Low Strain Integrity Testing & Cross Hole Sonic Logging and PDCA-PDI Certified HSDPT Professional”**

**GEOSCIENCE PILE TEST** is a professional engineering company which specializes in providing:

- High Strain Dynamic Pile Test
- Cross Hole Sonic Logging
- Sonic Integrity Test
- Static Load Test (Compression, uplift, Lateral)
- Plate Load Testing Services

and other specialize testing services for the foundation engineering industry.



**“OUR UNIQUE COMBINATION OF ADVANCE EQUIPMENT TECHNOLOGY AND PILE TESTING EXPERTISE HELP US TO BE MORE EFFECTIVE IN SERVING OUR CUSTOMERS”**



To enable us to provide high quality testing services, we own and operate state-of-art equipment and computer software. The systems we used are market leading brands and their reliability proven through thousands of field tests conducted every year both in local and international market.





# High Strain Dynamic Testing (ASTM D4945)

High Strain Dynamic Testing (HSDPT) consists of estimating soil resistance and its distribution from Force and Velocity measurements obtained near the top of a foundation impacted by a Hammer or Drop Weight. The impact produces a compressive wave that travels down the shaft of the foundation. A pair of Strain Transducers obtains the signals necessary to compute force, while measurements from a pair of Accelerometers are integrated to yield velocity. These sensors are connected to an instrument (such as a pile driving analyzer), that records, processes and displays data and result.



- Provides information on Friction, End-Bearing, Pile Integrity, Hammer Performance and Plot Simulated Load Test Curve for comparison with static testing
- Instant preliminary results on site
- Feedback on maximum tension and compression forces
- Pile Integrity- Location and extent of damage
- Mobilized Static Load capacity based on CASE method
- Confirm the geotechnical capacity of the pile

- Testing is conducted in a quick and non- destructive manner
- Cost effective
- Applicable for both Offshore & Onshore piling
- Static load tests are expensive and time consuming where as with PDA many more piles can be tested at much lower cost and speed
- HSDPT simply requires a drop weight to impact the shaft
- PDA is the answer for projects where Static Testing is prohibitively expensive or physically impossible

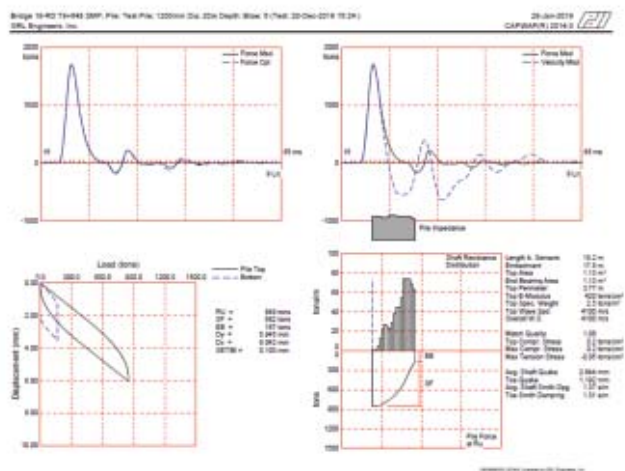


**“We have executed hundreds of High Strain Dynamic Pile Tests across Pakistan and have extensive onshore & offshore experience which enables us to provide quality services”**

# CAPWAP (Case Pile Wave Analysis Program)

CAPWAP (Case Pile Wave Analysis Program) is a rigorous numerical analysis, which models the pile and soil behaviour that allows full and accurate analysis of PDA field data. It involves applying the measured pile top force and velocity-time as a boundary condition to a wave equation model of the pile. Pile capacity predictions obtained by CAPWAP have been extensively compared with static load tests, with excellent agreement between the two. This unequalled wealth of comparative data gives you confidence in CAPWAP results.

## GRL Inc. USA renders CAPWAP Analysis services to Geoscience Pile Test



The output result provides:

- Total pile bearing capacity
- Dynamic soil response
- Simulated static load vs. pile top and toe movement
- Soil resistance distribution
- Dynamic forces and stresses along the shaft
- Damping and quake along shaft and at toe
- Measured and computed forces and velocities
- Maxima of displacement, velocity and transferred energy along the pile
- Optionally residual forces in pile and soil
- Comprehensive report including soil profile and driving log

## High Strain Dynamic Pile Testing (ASTM – D4945)

Sr. No.	Project	Year	No. of Piles	Test Load
01	Kandhkot Field Gas Compression Station Project, Kandhkot.	2008	01	230 tn
02	Saif Power Project, CCPP-Qadirabad, Sahiwal	2008	12	320 tn
03	Engro Energy Power Plant-Qadirpur, Distt. Ghotki	2008-09	02	128 tn
04	425 MW, CCPP-Nandipur	2009	08	400 tn
05	FAP Grain & Fertilizer Terminal-Port Qasim, Karachi	2009	02	5850 kN
06	Bahria Icon Tower, Clifton-Karachi	2009-10	12	2250 tn
07	Qasim International Containers Terminal-2, Port Qasim-Karachi	2009-10	07	7542 kN
08	Plot No. 58-C, Bukhari Commercial Area, Lane 13, Phase 06, DHA-Karachi	2010	02	300 tn
09	Bridge Over River Jhelum At GarhiDoppatta Project, Muzaffarabad-AJ &K	2011	01	1000 tn
10	Pakistan Deep Water Container Port, KeamariGroyne Terminal-Karachi	2011	02	4650 tn
11	Nauseri Bridge Project, Azad Jammu & Kashmir	2012	01	453 tn
12	Hotel Tower at Bahria Town Icon, Karachi.	2013	04	2250 tn
13	G 02, Block 02, Clifton – Karachi	2014	06	14250 kN
14	Hoshang Pearl Tower-Karachi	2014	02	1800 tn
15	2X660 MW Coal Fired Project, Port Qasim-Karachi	2014	06	312 tn
16	LNG Terminal at Port Qasim, Karachi	2014	02	12500 kN
17	35 Mw, Coal Fired Power Plant-Sitara Chemical Industries Limited, Faisalabad	2015	05	1700 kN
18	Fatima Co-Generation-2x60 MW, Power Plant-Sanawan.	2014-15	75	4500 kN
19	2X660 MW COAL POWER PLANT, SAHIWAL	2015	03	6000 kN
20	Ship lift Platform and Transfer System at Karachi Shipyard and Engineering Works, West Wharf-Karachi.	2015-16	05	7414 kN
21	Link Bridge Over The River Indus Connecting Jhirk & Mulla Katiyar	2016	02	1810 tn
22	THATTA – SUJJAWAL Bridge Over River Indus	2016	01	1810 tn
23	1230 MW, CCPP Haveli Bahadur Shah, Pakistan	2016	01	5000 kN
24	Establishment Of Specialized Medium Range Weather Forecasting Center And Strengthening of Weather Forecasting System.	2016	04	12000 kN
25	Korangi Crossing Flyover-Karachi	2016	01	450 tn
26	1X20MW Cogeneration Master Power Plant Project, Sundar-Raiwind.	2016	06	240 tn
27	ICI Soda Ash Plant,Khewra Project	2016	02	360 tn
28	Construction of R.C.C. Bridge on River Kabul, Nowshera (Kashti Pull).	2017	01	1000 tn
29	Captain Karnal Sher Khan Interchange, Swat Express Way	2017	01	750 kN
30	Karachi Thatta Dual Carriageway Project-Sindh	2017	06	500 tn
31	Lahore Eastern Bypass Project Package-I	2017	01	4000 tn
32	Rakhi Gajj-Bewata Section (N70) Project-Package I	2017	02	3224 kN
33	Swat Motorway Project	2018-19	20	1000 tn
34	RCC Bridge Tattapani Road Kotli, AJK	2018	01	900 tn
35	Lahore-Sialkot Motorway Project	2018-19	30	915 tn
36	Khazana Bypass Bridge Project Over River Panjkora	2018	01	393 tn
37	Construction of 4-Lane Bridge Across River Indus Linking Layyah With Taunsa.	2018	01	3500 tn
38	Eastbay Expressway Project Gwadar	2019	03	1125 tn
39	Kartarpur Bridge Over River Ravi, District-Narowal	2019	01	1600 tn



# Crosshole Sonic Logging (ASTM D6760)

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Crosshole Sonic Logging (CSL) is a method used to determine the quality and consistency of the concrete of bored piles. This method is considered to be most accurate in the determination of soundness of concrete within the drilled shaft inside of the rebar cage.



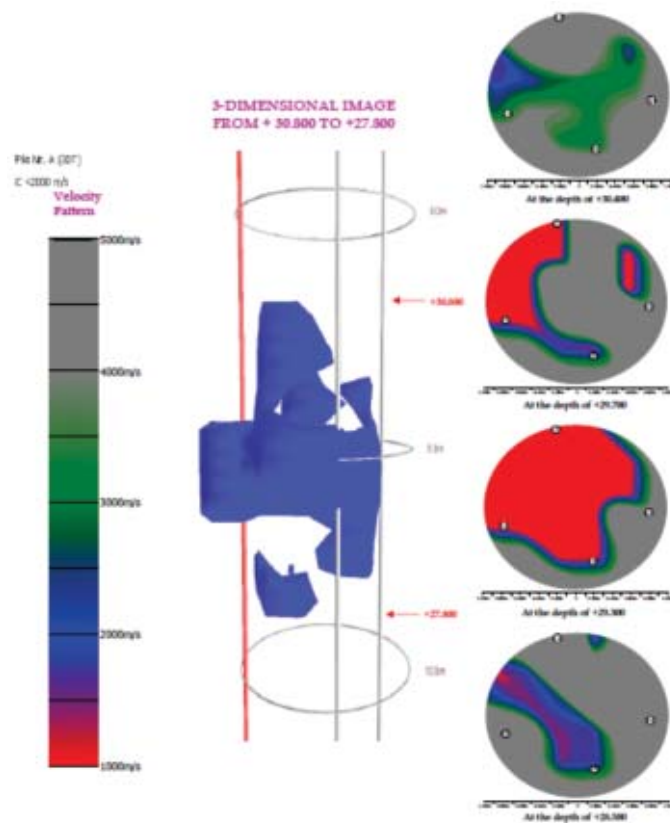
**“The only Company in Pakistan having PILETEST-UK certified Crosshole Sonic Logging Professionals”**

Crosshole Sonic Logging provides information on:

- Ultrasonic profiles of each localized section
- Inclusion of foreign material causing contamination of concrete
- Necking of pile due to collapse of side walls
- Detects the extent and location of damage. method
- Segregation due to over vibration and improper concrete placement
- Washout of cement due to groundwater flow
- Cracks in pile shaft due to shrinkage
- Provides an increased level of confidence in foundations

**“We have executed hundreds of Crosshole Sonic Logging across Pakistan and have extensive experience to work on longest river bridges in Pakistan”**





## Tomography (Two & Three Dimensional)

Normal (1D) CSL can only show the depth of an anomaly while tomography can help in the visualization of the shape, size and location of anomalies. It is an analysis and presentation method of captured CSL data, that projects the logged results into two dimensional (2D) plane or three dimensional (3D) body. Tomography results display internal concrete conditions, including animation of defects. Detected flaws can be viewed from different angles and perspectives thus providing essential information for the decision makers.



## Cross Hole Sonic Logging (ASTM – D6760)

Sr. No.	Project	Year	No. of Piles
01	Fauji Cement, JhangBhatar-Taxila	2007	05
02	Centaurus Tower, Blue Area, Islamabad	2007-08	15
03	Bridge Over River Indus, Connecting Larkana Khairpur	2007-09	87
04	Mubarak Center, Lahore	2008	02
05	425 MW, CCPP-Nandipur	2009	12
06	Bahria Icon Tower, Clifton-Karachi	2009	02
07	Construction of Sultan Bahoo Bridge River Chenab Linking Shorkot & Garh Maharaja	2012-13	38
08	Construction of Amri - Qazi Ahmed Bridge Over River Indus Connecting Amri (N55) With Qazi Ahmed (N5)	2012	68
09	Shaheed Benazir Bhutto Bridge Over River Indus At Nishtar Ghat.	2012-13	51
10	Hotel Tower At Bahria Town Icon, Karachi.	2013	11
11	Link Bridge Over The River Indus Connecting Jhirk& Mulla Katiar	2014-15	70
12	Construction of Bridge at River Indus between Rahim Yar Khan & Rojhan	2015	62
13	THATTA – SUJJAWAL Bridge Over River Indus	2015	81
14	Creek View and Creek Terraces, DHA Phase VIII – Karachi	2015	29
15	Peshawar Karachi Motorway Project (Sukkur-Multan Section-5)	2017	42
16	Lahore Sialkot Motorway Project	2018-19	18
17	Suki Kinari Hydropower Project	2019	20
18	KallurKot with Dera Ismail Khan Bridge Project	2019-20	81
19	Eastbay Expressway Project Gwadar	2019	30



# Sonic Integrity Testing (ASTM D5882)

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Sonic Integrity Testing (SIT/PIT) is an indirect method of testing Pile Foundation. Sonic Integrity testing is simple means to detect the major discontinuity and defect within the pile and is standardized by ASTM D5882 Standard Test Method for Low Strain Integrity Testing. There are two methods of Sonic Integrity Testing;

PULSE ECHO METHOD (TIME DOMAIN)

TRANSIENT RESPONSE METHOD (FREQUENCY DOMAIN)

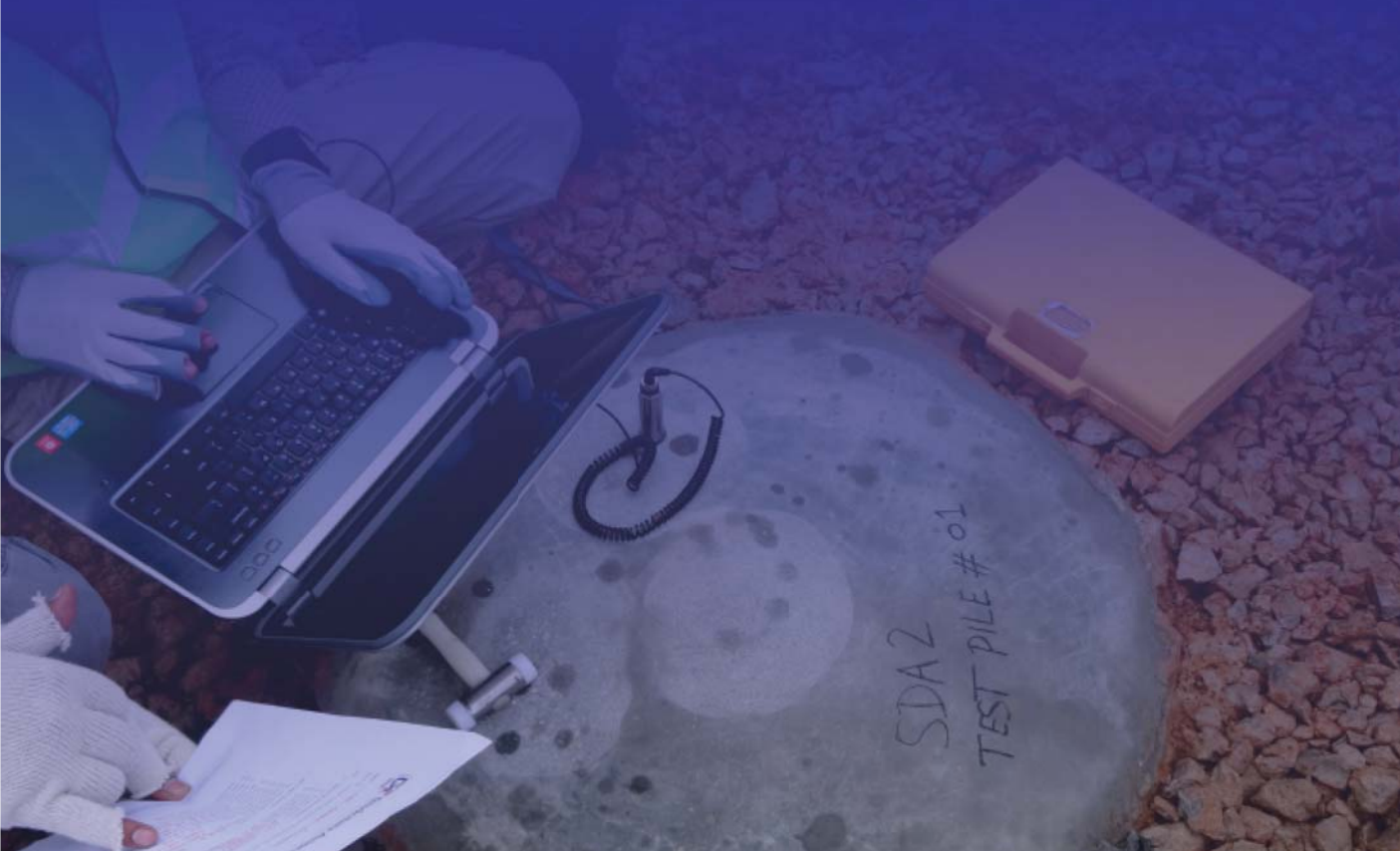


**“The only Company in Pakistan having PILETEST-UK certified Sonic Integrity Testing Professionals”**

### Main Advantages of Sonic Integrity Testing:

- First line quality assurance against major faults
- Defects discovered at an early stage
- Detects potential defects such as major cracks, soil inclusions or voids, Increase & Decrease Cross Section, Material & Soil Layer changes
- Quick and economical
- Can be performed on any accessible pile
- Quantum of piles can be tested in a single day

**“We have executed thousands of Sonic Integrity Tests across Pakistan and have rich experience to evaluate pile integrity”**



## Sonic Integrity Testing (ASTM – D5882)

Sr. No.	Project	Year	No. of Piles
01	Platinum Square, World Trade Centre, DHA Phase 2, Islamabad	2007-08	1334
02	Gold Crest, DHA-2, Islamabad	2007-08	949
03	Engro Chemicals Private Limited, Daharki – Sindh	2008-09	1228
04	Saif 225 MW, CCPP-Qadirabad, Sahiwal	2007-08	157
05	Centaurus Tower, Islamabad (Via TDRT Method)	2007-08	707
06	Engro Vopak Terminal Limited – Port Qasim, Karachi	2008	60
07	Engro Energy Power Plant-Qadirpur, District Ghotki, Sindh	2008-09	384
08	234-MW CCPP,Muridke	2008	152
09	Indus Highway Project,N-55,Phase-III (Dera Ismail Khan to Sarai Gambila)	2008-09	133
10	Fauji Fertilizer Company Limited Head Quarter Building Project-Rawalpindi	2009	112
11	425 MW, Combined Cycle Power Plant-Nandipur	2009	136
12	Avari Hotel-Islamabad	2009	106
13	Benazir Bhutto International Airport, Islamabad	2010	1377
14	Bridge Over River Soan at Trap, Distt. Attock	2010	90
15	Access Bridge for Patrind Hydro Power Project, Muzzaffarabad-AJK	2011	22
16	Construction of 200 BED Surgical Hospital-Sukkur	2012	242
17	Fatima Co-Generation – 2x60 MW, Power Plant-Sanawan.	2014-15	284
18	Construction of New U.S. Embassy Compound Project, Islamabad.	2016	24
19	1X20MW Cogeneration Master Power Plant Project, Sundar-Raiwind.	2016-17	188
20	ICI Soda Ash Plant,Khewra Project	2016	45
21	Karachi- Lahore Motorway Project (Abdul Hakeem-Lahore Section-III)	2016-17	490
22	Peshawar Karachi Motorway Project (Sukkur-Multan Section-5)	2017	118
23	Bestway Cement Limited Farooqia Line-II	2017	34
24	Swat Motorway Project	2017	18
25	Lahore Sialkot Motorway Project	2018-19	497



# Static Load Testing (ASTM D1143)

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Static load testing is an in situ type of load testing used in geotechnical investigation to determine the bearing capacity of deep foundations prior to the construction of a building.



- Confirm the suitability of the pile-soil system to support the pile design load with an appropriate factor of safety.
- Develop information for use in the design and/or construction.
- Most accurate method to determine static pile capacity
- Perform at design or construction stage



# LATERAL LOAD TEST (ASTM D3966)

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Performed on a pile in order to evaluate its performance relative to the lateral load / displacement criteria for the design of the working piles

- Most accurate because it simulate actual conditions
- Measures the response of the pile & soil system to lateral loads
- Provide data for engineering design, quality control
- Measurements taken simultaneously for side displacements allow to estimate the side bearing capacity

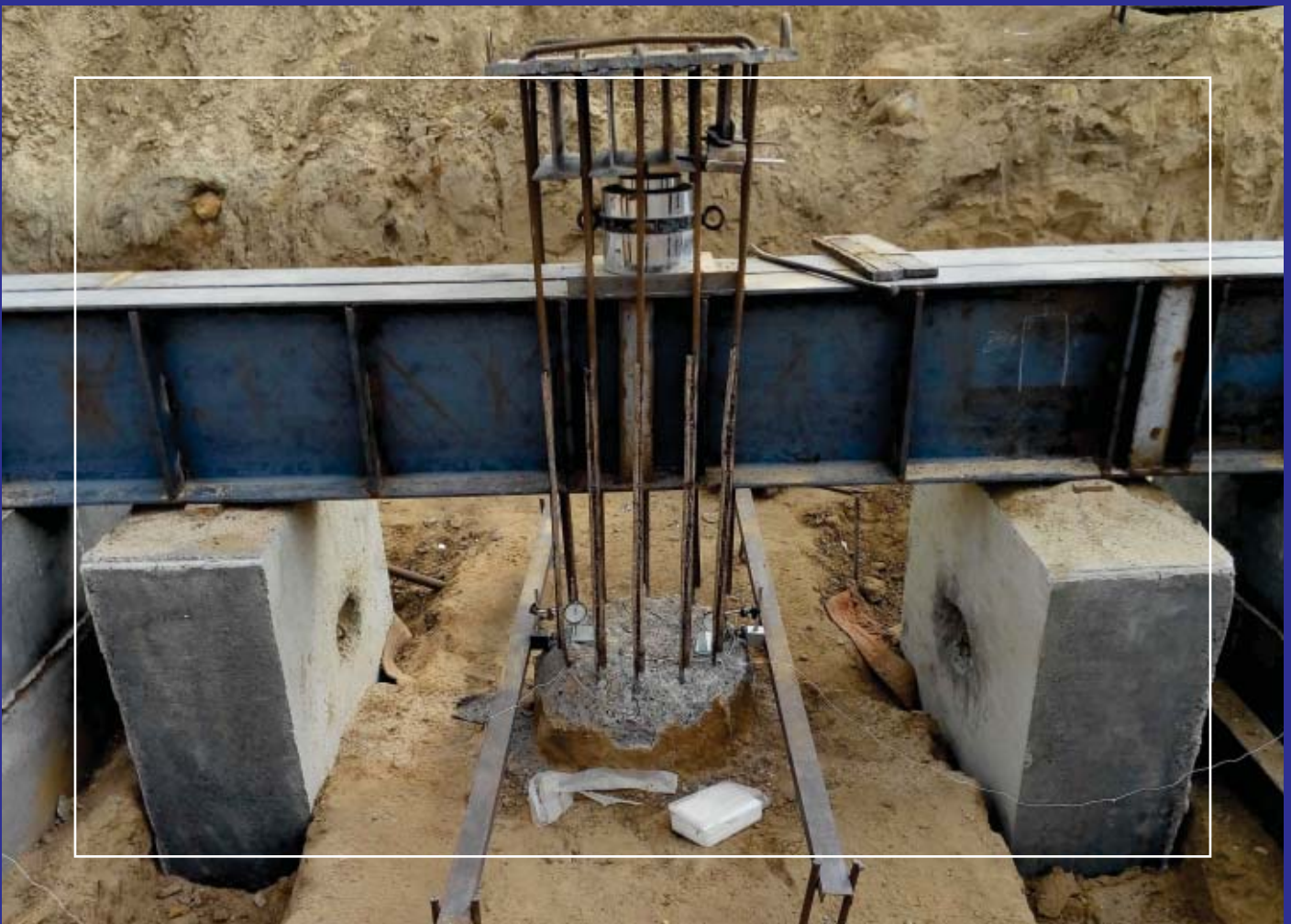


# TENSILE/UPLIFT LOAD TEST (ASTM D3689)

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Uplift Load Test measure the axial deflection of a vertical or inclined deep foundation when loaded in static axial tension.

- Used for testing single piles or pile group
- Provide information used to assess the distribution of side shear resistance along the pile and the long-term load-deflection behavior
- Allow a direct comparison of tension and compression in the same strata

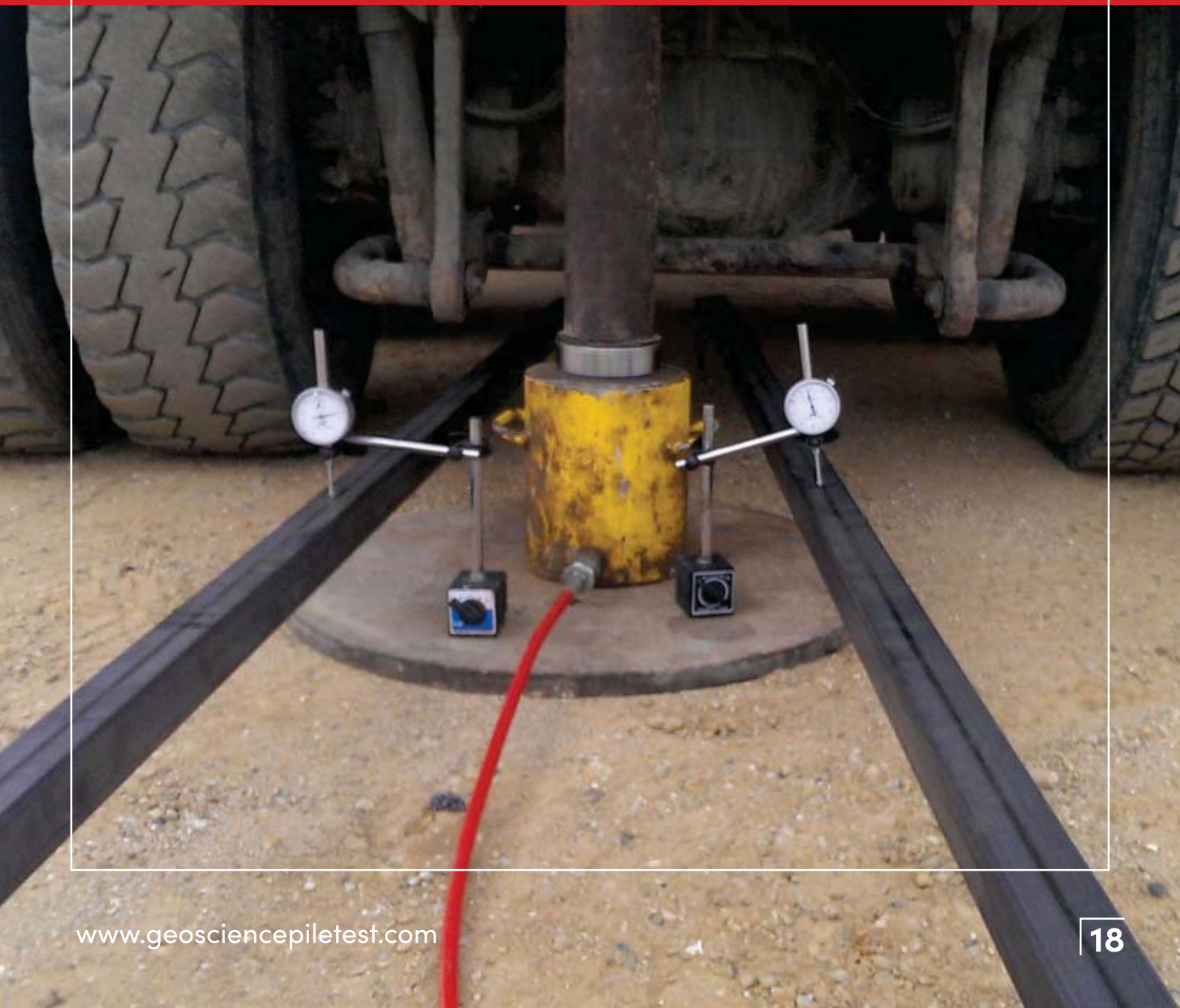


# PLATE LOAD TEST (ASTM D1196)

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Plate Load Test determines the ultimate bearing capacity of Soil and the likely settlement under a given load

- Shallow foundation can be calculated considering the allowable bearing capacity
- Being able to understand the foundation behavior under loading condition
- Easy to perform, reliable, time and cost efficient



# CERTIFICATE

THIS IS TO CERTIFY THAT

Mr. Faraz Junaid Khan  
COMPANY: "GEOSCIENCE ASSOCIATE"

HAS SUCCESSFULLY PASSED A PROFICIENCY EXAMINATION  
ON  
LOW STRAIN IMPACT ECHO METHOD (ASTM D5882)  
AND  
CROSS-HOLE ULTRASONIC METHOD (ASTM D6760)



AUGUST 31, 2016

FREE I. ANIN

*E. I. Anin*



This documents that

**Faraz Junaid**  
**GeoScience Associates**

has on October 29, 2015, achieved the rank of

**BASIC**

on the **Dynamic Measurement and Analysis Proficiency Test.**

The individual identified on this document demonstrated to the degree granted above an understanding of theory, data quality evaluation, interpretation and spiral plotting for high speed dynamic testing of soils, foundations. It is recommended that individuals at the Basic level seek Intermediate, Advanced, Master or Expert levels through additional study within two years of the date of this document.

The ability of the individual named to provide appropriate knowledge and advice on a specific project is not implied or warranted by the Pile Driving Contractors Association or Pile Dynamics, Inc. The Pile Driving Contractors Association or Pile Dynamics, Inc. assumes no liability for foundation testing and analysis work performed by the bearer of this certificate. This certificate can be verified at [www.PDAproficiencytest.com](http://www.PDAproficiencytest.com)

*Steven A. Hall*  
Steven A. Hall, Executive Director  
Pile Driving Contractors Association



*Richard Libera*  
Richard Libera, Senior Partner  
Pile Dynamics, Inc. No. 1011

# CERTIFICATE

THIS IS TO CERTIFY THAT

Mr. Mikhayilov Bilal Afzal  
COMPANY: "GEOSCIENCE ASSOCIATE"

HAS SUCCESSFULLY PASSED A PROFICIENCY EXAMINATION  
ON  
LOW STRAIN IMPACT ECHO METHOD (ASTM D5882)  
AND  
CROSS-HOLE ULTRASONIC METHOD (ASTM D6760)



AUGUST 31, 2016

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# Our Clients



**中国铁建**



Technically Backed By





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