



# FALL 2006 - ENSOFT SHORT COURSE

## Design of Deep Foundations: Drilled Shafts and Piles Under Lateral and Axial Loading

*A Seminar and Workshop Featuring Computer Programs from Ensoft, Inc.*

**November 8-10, 2006**

### LOCATION & RESERVATIONS

#### Ensoft, Inc. – Office Building

3003 West Howard Lane, Austin, Texas 78728  
Tel. (512) 244-6464, Fax (512) 244-6067

#### Hotel Information:

**LaQuinta Suites**, Tel. (512) 832-2121  
11901 N. MoPac Hwy., Austin, TX 78729

**Hampton Inn (Northwest)**, Tel. (512) 349-9898  
3908 W. Braker Lane, Austin, TX 78759

**Courtyard by Marriott**, Tel. (512) 502-8100  
9409 Stonelake Blvd., Austin, TX 78759

*(These hotels are within 5-15 minutes driving distance from the training facility)*

### SPEAKERS

#### Lymon C. Reese, Ph.D., P.E.

*Honorary Member, ASCE; Principal, Ensoft, Inc., Professor Emeritus, The University of Texas at Austin.* Dr. Reese has over 40 years of experience in research on pile foundations and continues his active involvement in research and design. He has pioneered performing field studies of instrumented piles at The University of Texas at Austin and the University of California at Berkeley. Analytical methods developed by Dr. Reese are now widely used in the design of major structures. He has been a member of the National Academy of Engineering for over 30 years. Author of over 150 technical papers and reports, he has presented invited lectures in the United States and abroad. He has also coauthored three design manuals published by the US Federal Highway Administration, including "Design and Analysis of Piles and Pile Groups Under Lateral Loads" and "Drilled Shafts: Construction Procedures and Design Methods."

#### William M. Isenhower, Ph.D., P.E.

*Project Manager, Ensoft, Inc.* Dr. Isenhower is a registered professional engineering in the State of Texas, with over 30 years of experience in civil engineering, with an emphasis on geotechnical engineering. His experience has been in consulting, government service, university teaching, and contract research. He has been engaged in consulting projects, site investigations, foundation analysis and design, slope stability analysis and design, and retaining structure analysis and design. Dr. Isenhower has served as an Expert on Mission for the United Nations Development Program and has served as a consultant to the US Army Corps of Engineers. He has authored over 30 technical papers and reports, and has presented invited lectures in the United States and abroad. Dr. Isenhower is currently an instructor of the National Highway Institute short course "Drilled Shafts."

#### Shin-Tower Wang, Ph.D., P.E.

*President, Ensoft, Inc.* Dr. Wang is a registered professional engineering in the State of Texas, with over 30 years of experience in civil engineering, with an emphasis on geotechnical and structural engineering. He has engaged in numerous consulting projects in soil structure interaction analyses, pile loading tests, deep foundation designs, and numerical analyses. Dr. Wang received M.S. and Ph.D. degrees from The University of Texas at Austin. He has published over 30 technical papers and reports, and has coauthored several computer programs that are currently sold by Ensoft, Inc.

#### José A. Arréllaga, M.S.

*Technical Support Manager, Ensoft, Inc.* José Arréllaga has a strong academic and practical background in the field of structural engineering. He has organized and directly participated in a variety of large consulting projects requiring a combination of earthquake, forensic, structural, and geotechnical engineering concepts. At Ensoft, Mr. Arréllaga has been in charge of technical support, Internet updates, and programming. His consulting practice involves projects where applications of structural theories are needed along with geotechnical engineering concepts.

### REGISTRATION & FEES

#### Single Registration<sup>(1)</sup>

	Early Rates (up to Oct. 8)	Std. Rates (after Oct. 8)
One-Day Session on Nov. 8 .....	\$400 .....	\$480
Two-Day Session on Nov. 9 & 10.....	\$600 .....	\$720
All 3-Day Sessions on Nov. 8 to 10.....	\$900 .....	\$1080

#### Multiple Registrations<sup>(1)(2)</sup>

(Rates per person)	Early Rates (up to Oct. 8)	Std. Rates (after Oct. 8)
One-Day Session on Nov. 8 .....	\$340 .....	\$420
Two-Day Session on Nov. 9 & 10.....	\$510 .....	\$630
All 3-Day Sessions on Nov. 8 to 10.....	\$760 .....	\$940

<sup>(1)</sup>Includes refreshments and bound manuals of material on discussed topics.

<sup>(2)</sup>Valid for 2 or more registrations from the same company.

TOTAL..... \$ \_\_\_\_\_

Name(s): \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City/ST/Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

Please select your method of payment:

Check enclosed     Credit card

Name on card: \_\_\_\_\_

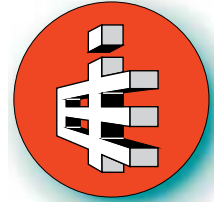
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### SPECIAL OFFER

Software products developed by ENSOFT, INC. may be purchased by course attendees at a 20% discount within one month of the Short Course. A bound manual of literature of covered topics is provided for Session 1 on Nov. 8 and a separate manual is provided for Session 2 on Nov. 9 & 10. Additional manuals may be ordered in advance at \$80 per unit.

[www.ensoftinc.com](http://www.ensoftinc.com)

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## Design of Deep Foundations: Drilled Shafts and Piles Under Lateral and Axial Loading

*A Seminar and Workshop Featuring Computer Programs from Ensoft, Inc.*

### One-Day Session: Wednesday Nov. 8, 2006

The One-Day Session on November 8 has been prepared to provide expert-level training regarding the design of single piles or shafts under lateral loads using the LPILE software.

Time	Subject	Description	Time	Subject	Description
8:00	Introduction	Computer setups, introduction and session description	12:00	Lunch	
8:15	Analytical Principles	Principles and discussion of soil-structure interaction	1:00	LPILE 1	Detailed software training using LPILE Plus v5
9:00	$p$ - $y$ curves 1	Theoretical basis of lateral load-transfer ( $p$ - $y$ ) curves and experimental validation	3:00	Coffee Break	
9:45	Coffee Break		3:00	LPILE 2	Detailed software training using LPILE Plus v5
10:00	$p$ - $y$ curves 2	Description of the $p$ - $y$ curves used in LPILE and GROUP software	4:00	Applications	Work on selected sample applications submitted by attendees in advance of short course or selected by instructor
11:00	Material Response	Study of nonlinear moment-curvature of drilled shafts and prestressed concrete piles	5:00 to 5:30	Completion of Course	

### Two-Day Session: Thursday Nov. 9, 2006

The Two-Day Session on November 9 & 10 provide training in the design of single piles and shafts under axial loads, retaining walls, stability of slopes and on pile groups under combined loading.

Time	Subject	Description	Time	Subject	Description
8:00	Introduction	Computer Setups, Introduction and Session Description	12:00	Lunch	
8:30	Single drilled shafts under axial loading	Differential equation for drilled shafts under axial loading, definition of $t$ - $z$ curves for transfers in side resistance and $q$ - $w$ curves for transfers in end bearing. Computation methods used in SHAFT software.	1:00	SHAFT APILE	Detailed software training using SHAFT v5 and APILE Plus v4
9:45	Coffee Break		2:30	Coffee Break	
10:00	Single piles under axial loading	Theory of $t$ - $z$ curves and $q$ - $w$ curves used for driven piles. Computation methods employed in APILE software.	2:45	Construction issues	Overview of different construction methods for deep foundation, review of construction problems and recommended practice.
11:00	Tests of piles under axial loading	ASTM test procedures, description of instrumentation options, experimental procedures, results from instrumented load tests.	3:45	Pile Groups	Introduction to pile groups, response of piles in groups under various loadings.
			4:00	Closely spaced piles	Analytical methods to compute reduction factors for axial loads and for lateral loads.

For more details or online registration, visit us at [www.ensoftinc.com](http://www.ensoftinc.com) or send email to [seminars@ensoftinc.com](mailto:seminars@ensoftinc.com)



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### Design of Deep Foundations: Drilled Shafts and Piles Under Lateral and Axial Loading

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The Two-Day Session on November 9 & 10 provide training in the design of single piles and shafts under axial loads, retaining walls, stability of slopes and on pile groups under combined loading.

**Two-Day Session:  
Friday Nov. 10, 2006**

Time	Subject	Description	Time	Subject	Description
8:00	GROUP	Detailed software training using GROUP v7.0 for Windows	1:00	Bridge foundation	Case study of a bridge foundation supported by a pile group
9:15	PYWALL	Introduction to flexible retaining walls and detailed software training using PYWALL v3.0 for Windows	2:00	Transmission tower	Case study of pile-supported transmission towers
10:30	<i>Coffee Break</i>		3:00	<i>Coffee Break</i>	
10:45	STABLPRO	Introduction to slope stability analyses and detailed software training using STABLPRO v3	3:15	Various	Problem solving session of cases submitted by course attendees
12:00	<i>Lunch</i>				

### GENERAL NOTES

Course attendees are encouraged to bring a laptop computer to the course. Those bringing computers to the course will be able to use software to use during the course will be able to participate in the solution of design exercises. A limited number of desktop computers will be available but must be checked in advance during registration. Each attendee will have access to a broadband Internet connection at the site to send and receive e-mail and to access local printers.

Those attending the short course are also encouraged to bring design problems of interest to them and their employers. Advice on how to set up design computations for the design problem and guidance about preparation of plans and specification will be provided by the instructors.

The number of spaces available in the short course is limited, so registration will be based on a first come-first served basis.

Companies wishing to inquire about having the same training course or another advanced training course to be held at their offices may call Ensoft to obtain a cost proposal.

Companies wanting information about the two-day short course on Design and Construction of Drilled Shafts offered by Ensoft and ADSC –The International Association of Foundation Drilling– may call or e-mail Ensoft to obtain information on the next scheduled course and location.

### PDH CREDITS

Assistance to this short course will provide you with up to 19 professional development hours (PDH) that can be applied towards your local P.E. license requirements for renewal. Ensoft provides a signed document for the participation in the professional short course along with the number of hours of training.

**Call us at 512-244-6464 or visit our web site to register for the short course**

### COURSE BENEFITS

- ◆ Learn how to use effective tools and proper numerical models for deep foundations
- ◆ Improve the efficiency of your future foundation designs
- ◆ Keep short course manuals and personal notes as reference for future numerical models and designs of deep foundations
- ◆ Use the limited 20% discount on software upgrades and new purchases for the whole office site of registered attendants to the short course
- ◆ Earn up to 19 PDH credits towards PE renewals for this course

For more details or online registration, visit us at [www.ensoftinc.com](http://www.ensoftinc.com) or send email to [seminars@ensoftinc.com](mailto:seminars@ensoftinc.com)

## CURRENT ENSOFT PRICE LIST

### Software Titles:

LPILE Plus 5.0 for Windows .....	\$950
GROUP 7.0 for Windows .....	\$1,500
Upgrade from GROUP v6.0 .....	\$185
Upgrade from GROUP v5.0 .....	\$350
Upgrade from GROUP v4.0 .....	\$800
SHAFT 5.0 for Windows .....	\$750
APILE Plus 4.0 for Windows .....	\$750
PYWALL 2.0 for Windows .....	\$750
TZPILE 2.0 for Windows .....	\$750
StablPro 3.0 for Windows .....	\$490
LPA 3.0 for Windows .....	\$490
DynaPile 1.0 for Windows .....	\$1,490
DynaMat 1.0 for Windows .....	\$1,490
DynaN 2.0 for Windows .....	\$2,900
SuctionPile 1.0 for Windows .....	\$1,190
GeoMat 1.0 for Windows .....	\$990
BorinGS for Windows .....	\$295
PRConn 3.0 for Windows .....	\$995
GRLWEAP 2005 for Windows .....	\$990
AMPS (General Finite Element).....	call
Extra copies of any Ensoft manual .....	\$30 each

**Call for volume, upgrades, and academic pricing**  
(Prices above are before 20% participation discount)

### Books/Publications:

<i>Single Piles and Pile Groups Under Lateral Loading</i> by Lymon C. Reese and William F. Van Impe (A. A. Balkema, Nov. 2001, 480pp.)	
Hardback.....	\$110
Paperback .....	\$65
<i>Analysis and Design of Shallow and Deep Foundations</i> Lymon C. Reese et al. (Wiley, Nov. 2005, 608pp.)	
Hardback.....	\$110
<i>FHWA Manual - Drilled Shafts: Construction Procedures and Design Methods</i> by L.C. Reese & M.W. O'Neill (FHWA, 1999, 768pp.) -Limited Availability-	
Paperback (2 volumes) .....	\$125

### ADSC 2007

Visit Ensoft's booth (#200) at the upcoming International Association of Foundation Drilling (ADSC-IAFD) "ADSC's 2007 Annual Meeting & Equipment Exhibit Show" in the Buena Vista Palace, Walt Disney World Resort, Orlando, Florida, on Jan. 31 through Feb. 3rd.



**ENSOFT, INC.**

**ENGINEERING  
SOFTWARE**

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