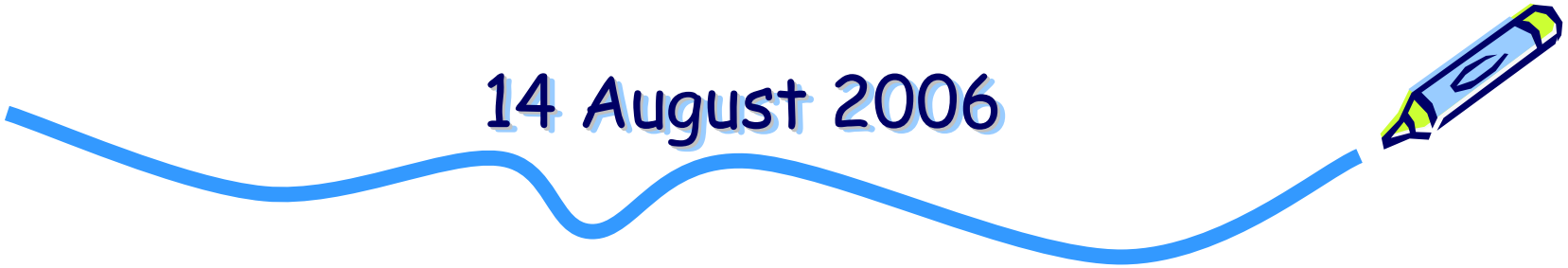
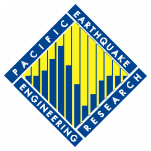
OpenSees Resources

Silvia Mazzoni
University of California, Berkeley

OpenSees User Workshop

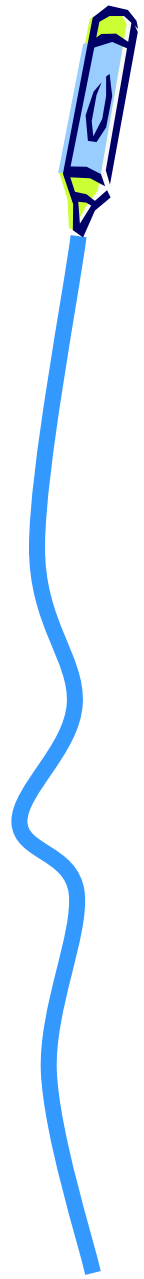
14 August 2006





OpenSees user resources

- http://OpenSees.berkeley.edu/
  - Both an executable version and the source code are publicly available
  - User Command Manual
  - Examples Manual
  - e-mail technical support
  - The OpenSees Community Forum
- Annual User Workshops



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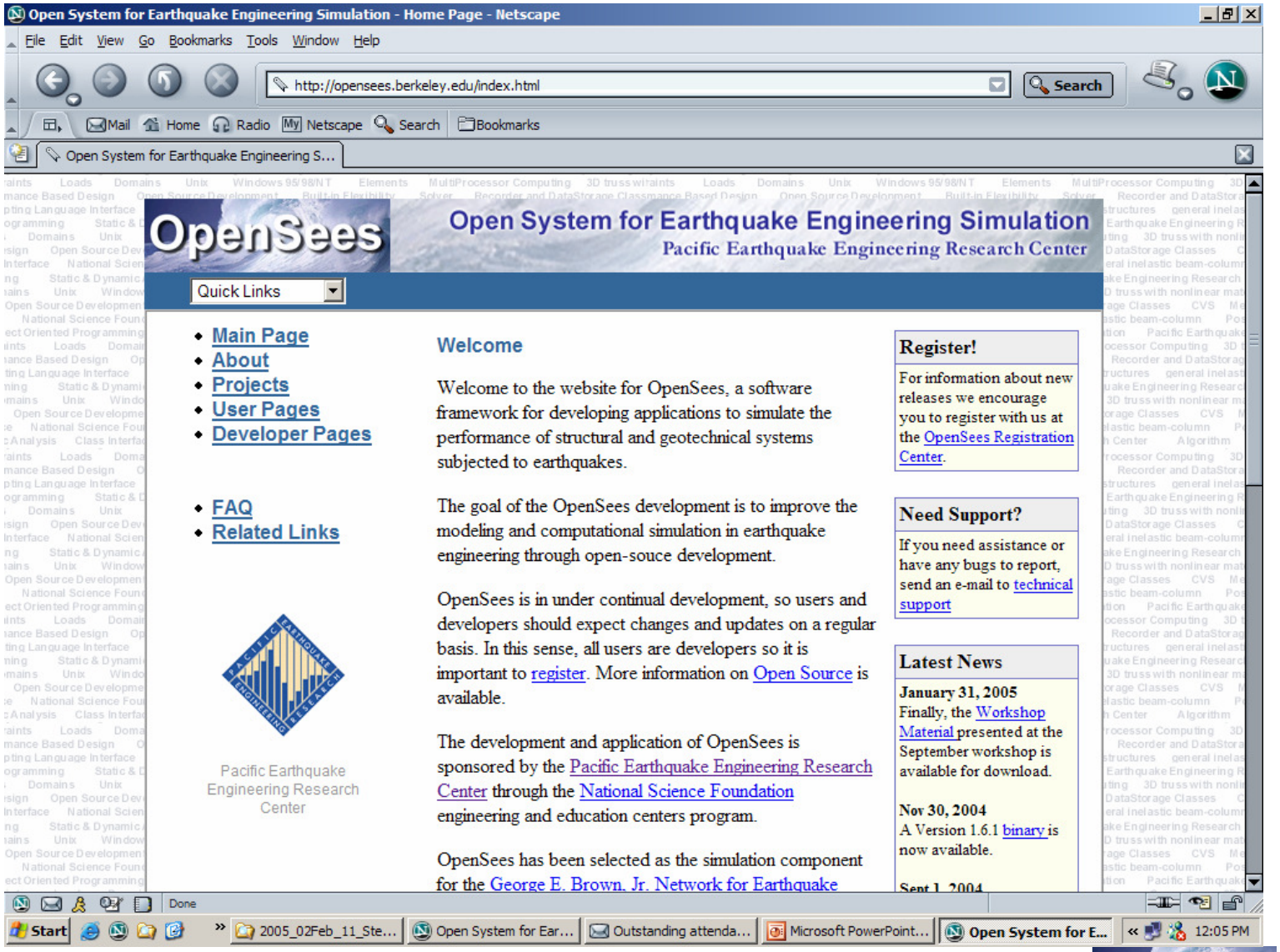

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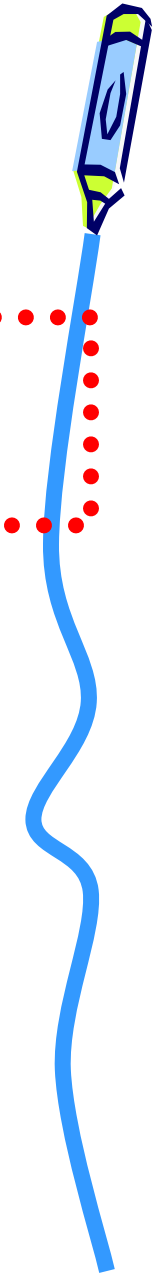

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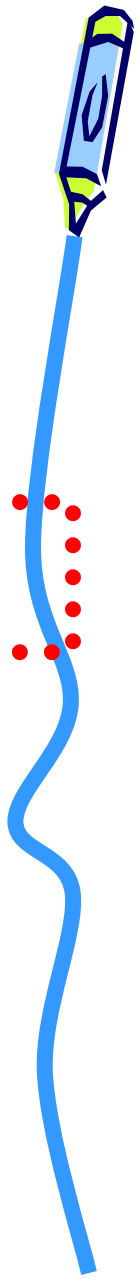
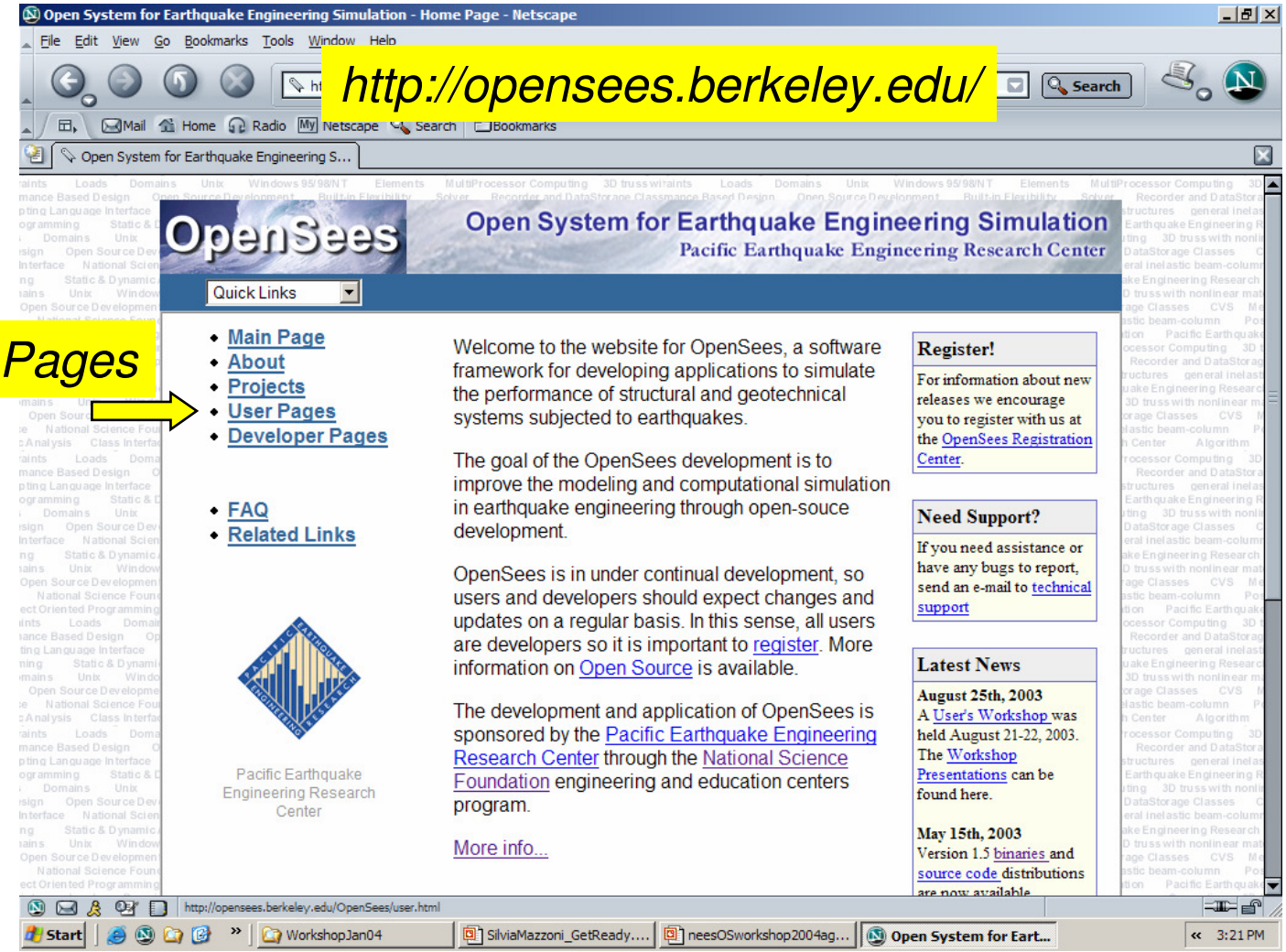
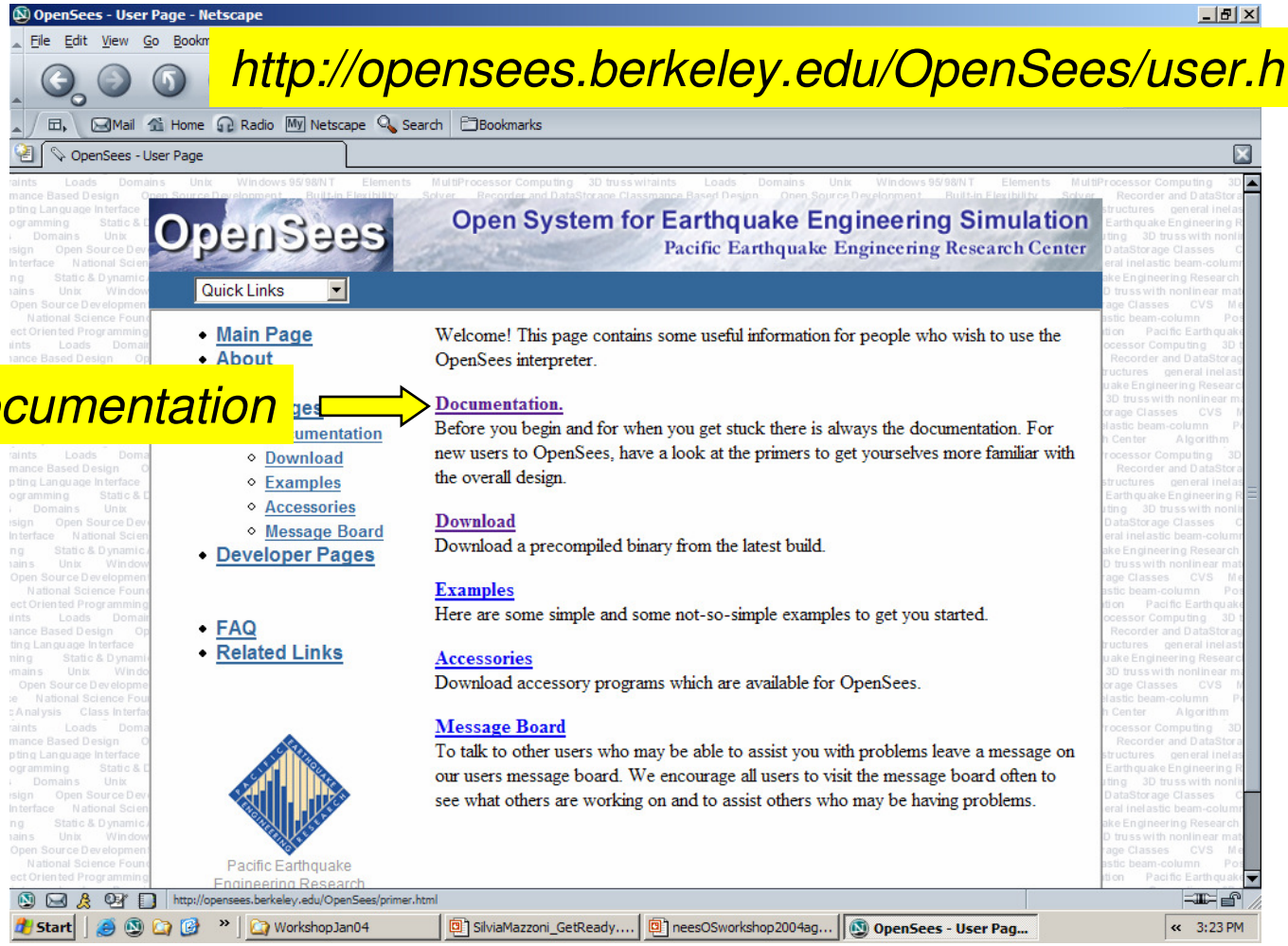


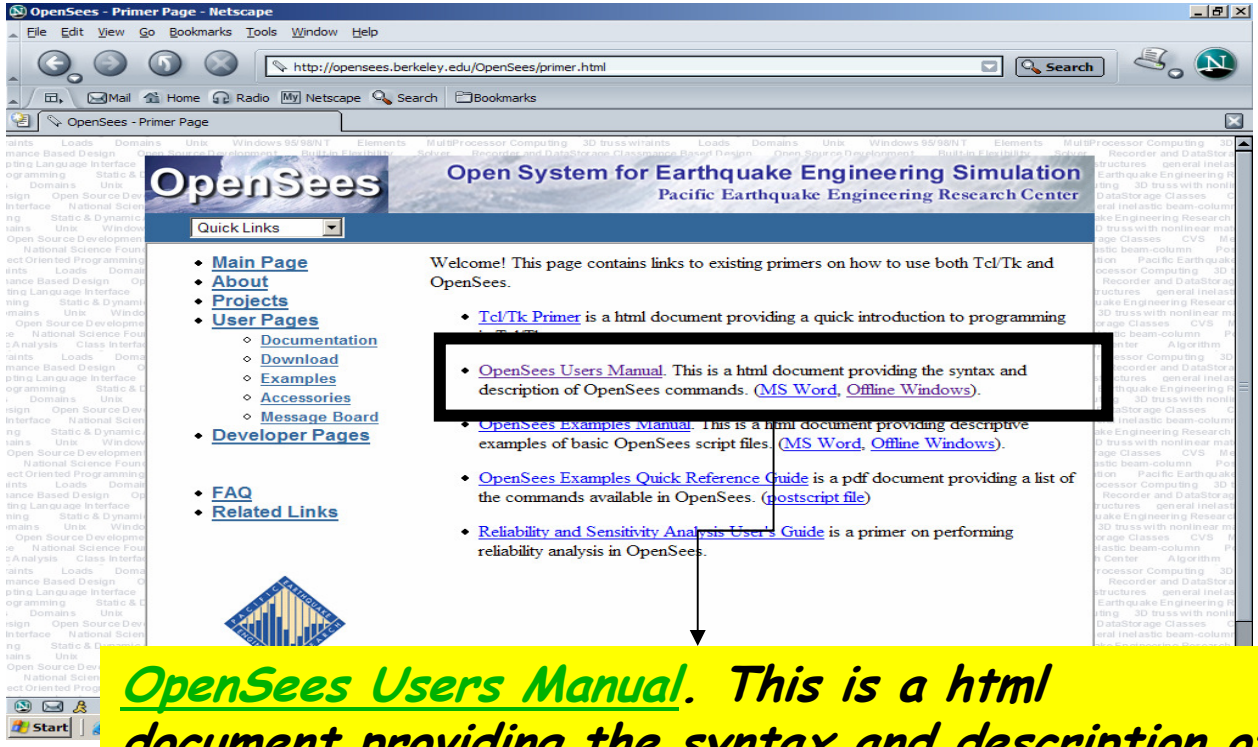
download documentation



documentation



download User Manual



OpenSees Users Manual. This is a html document providing the syntax and description of OpenSees commands. (MS Word, Offline Windows).

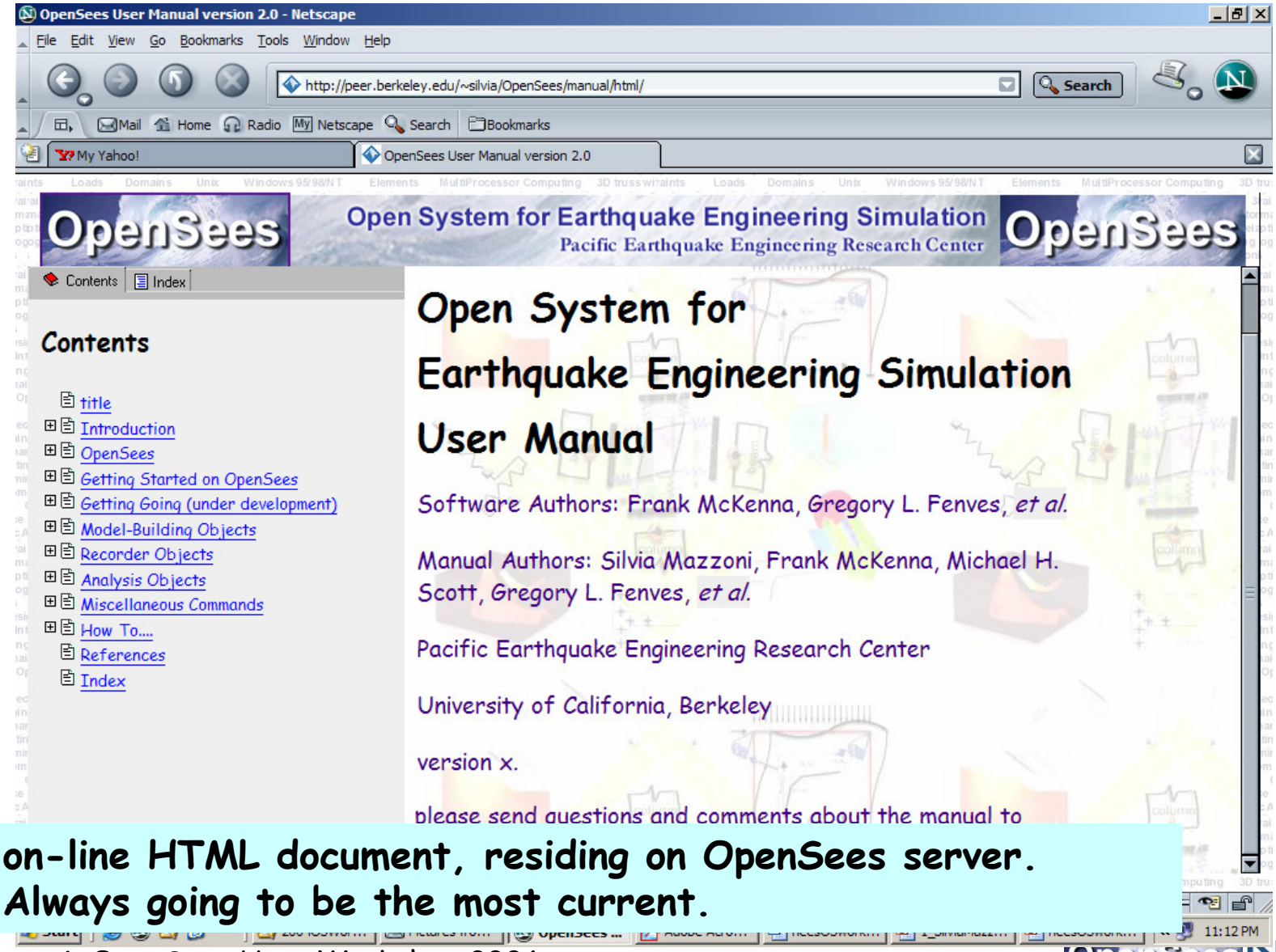
http://opensees.berkeley.edu/OpenSees/manuals/usermanual/

OpenSees User Manual

A document providing the syntax and description of OpenSees commands in 3 formats:

1. **HTML Manual** – on-line HTML document, residing on OpenSees server. Always going to be the most current.
2. **MS Word** – downloadable and printable Word document in PDF format
3. **Offline Windows** – downloadable .chm file. it is similar to the HTML format, but the file resides on your computer.

1. HTML on-line format



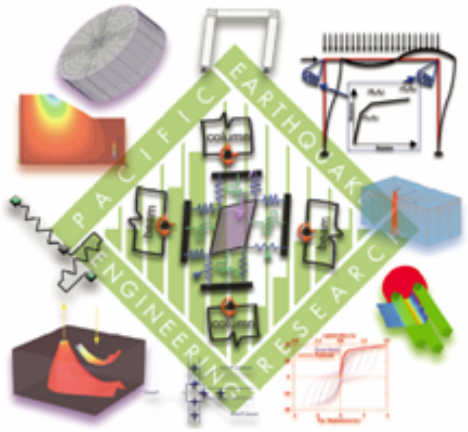
on-line HTML document, residing on OpenSees server. Always going to be the most current.

2. MS Word format -- PDF

downloadable and printable Word document in PDF format

Open System for Earthquake Engineering Simulation (OpenSees)

OpenSees Command Language Manual



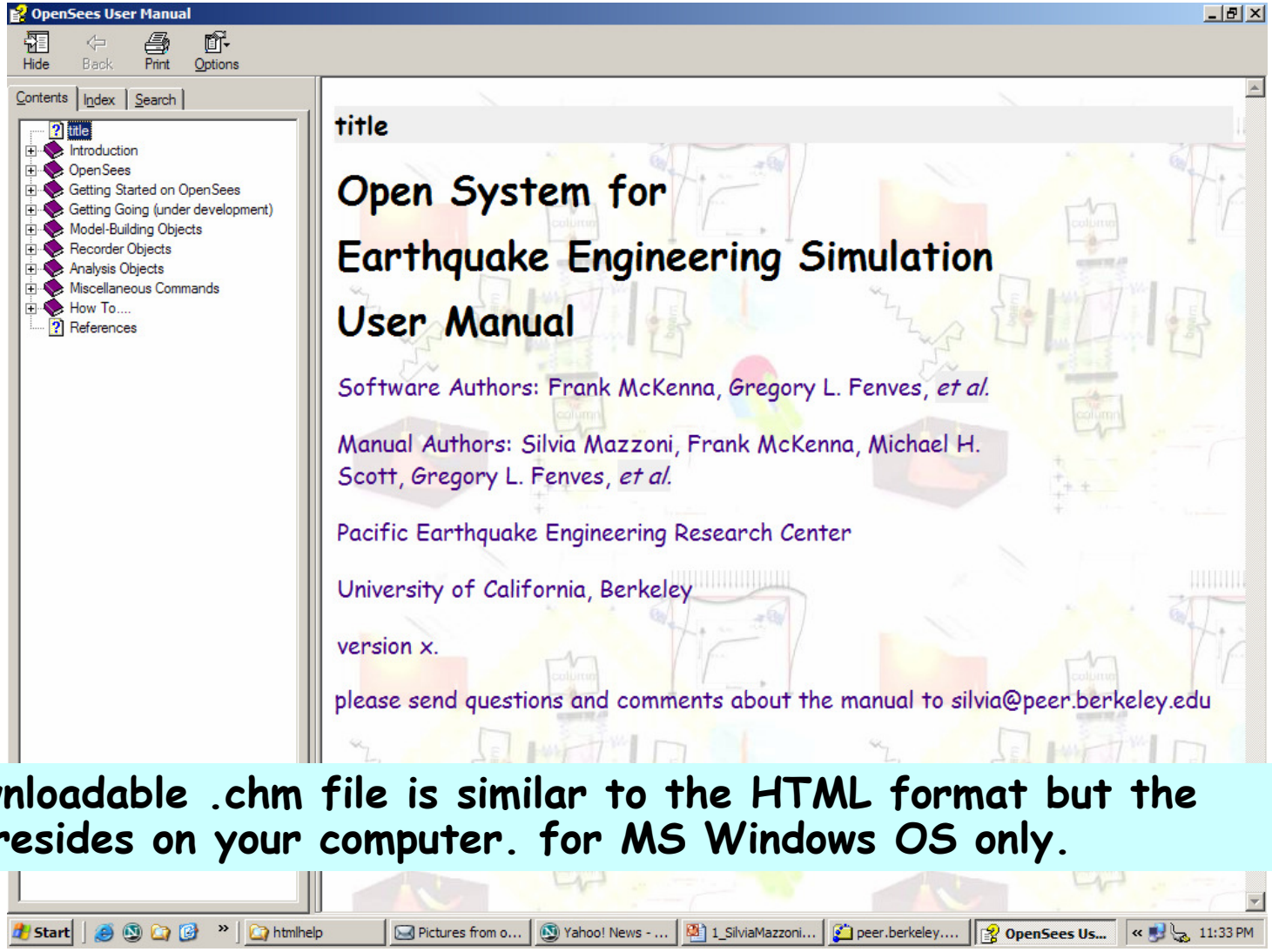
Silvia Mazzoni, Frank McKenna, Michael H. Scott, Gregory L. Fenves, Boris Jeremic

Printed on 29 August, 2004

Contents

OpenSees NEESit

3 .chm file for MS Windows



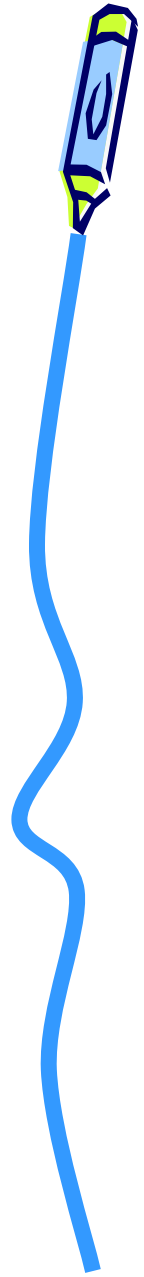
the downloadable .chm file is similar to the HTML format but the file resides on your computer. for MS Windows OS only.

Manual Chapters

- title
- Introduction
- OpenSees
- Model-Building Objects
- Recorder Objects
- Analysis Objects
- Miscellaneous Commands
- How To....
- Getting Started on OpenSees
- Getting Going (under development)
- References
- Index

OpenSees

- OpenSees
  - ModelBuilder Object is responsible for building the following objects in the model and adding them to the domain
  - Domain Object is responsible for storing the objects created by the ModelBuilder object and for providing the Analysis and Recorder objects access to these objects
  - Analysis Object is responsible for performing the analysis
  - Recorder Object monitors user-defined parameters in the model during the analysis



Model-Building Objects

- model Command
- node Command
- mass Command
- Constraints objects
- uniaxialMaterial Command
- nDMaterial Command
- section Command
- element Command
- block Command
- region Command
- Geometric Transformation Command
- Time Series
- pattern Command

Recorder Objects

- Node Recorder
- EnvelopeNode Recorder
- MaxNodeDisp Recorder
- Drift Recorder
- Element Recorder
- EnvelopeElement Recorder
- Display Recorder
- Plot Recorder
- playback Command

Analysis Objects

- constraints Command
- numberer Command
- analysis Command
- algorithm Command
- integrator Command
- system Command
- test Command
- analyze Command
- rayleigh command
- eigen Command
- dataBase Commands

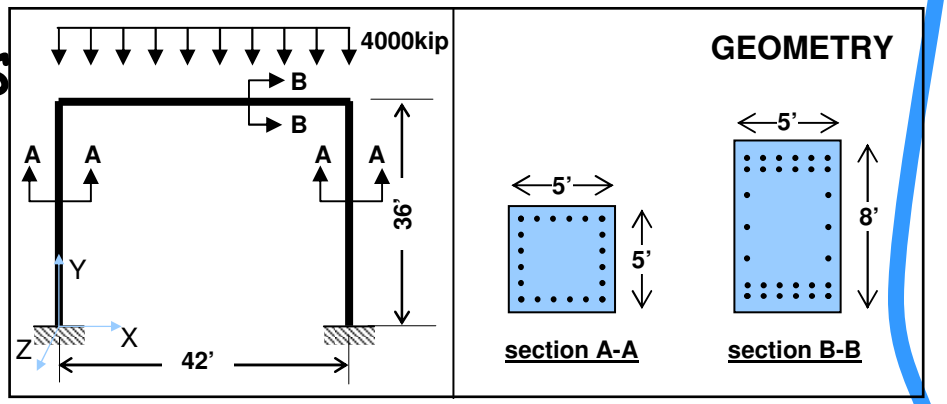
Miscellaneous Commands

- print Command
- reset Command
- wipe Command
- wipeAnalysis Command
- loadConst Command
- getTime Command
- nodeDisp Command
- video Command

How To....

- ...Run OpenSees
- ...Define Units & Constants
- ...Generate Matlab Commands
- ...Define Tcl Procedure
- ...Read External files
- Building The Model
- Defining Output
- Gravity Loads
- Static Analysis
- Dynamic Analysis
- ...Combine Input-File Components
- ...Run Parameter Study
- ...Run Moment-Curvature Analysis on Fiber Section
- ...Determine Natural Period & Frequency

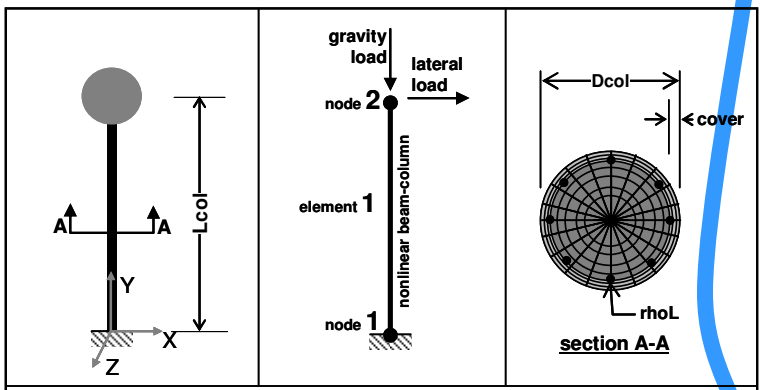
Getting Started on OpenSees



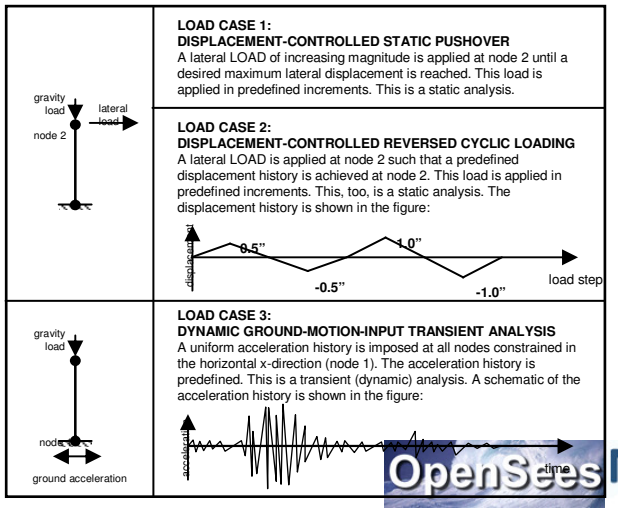
- Download OpenSees
- Run OpenSees
- Problem Definition
- Model Builder
- Nodes & Elements
- Elements & Element Connectivity
- Gravity Loads
- Recorders
- Lateral Loads
  - 1-Step Lateral Load
  - Incremental Static Pushover
  - Dynamic

Getting Going (under development)

- *Problem Definition*
- *Model Building*
  - *Variables and Units*
  - *Getting Going -- Model Builder*
  - *Nodal Coordinates & Masses, Boundary Conditions*
  - *Materials*
  - *Element Cross Section*
  - *Elements and Element Connectivity*
  - *Gravity and other Constant Loads*
  - *Summary of Defining Structural Model*
  - *Error-Checking Tip for Model Building*
- *Recorders for Output*
- *Analysis Components*

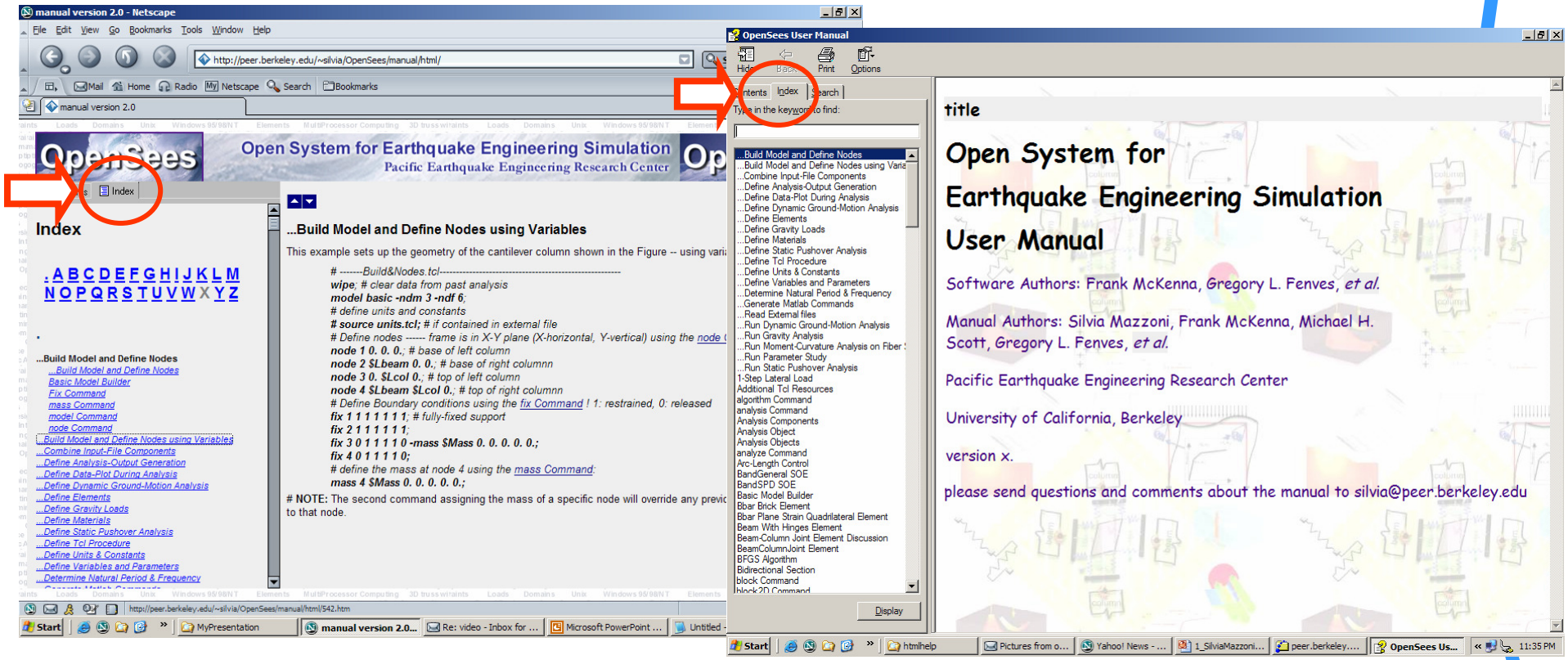


Column length, Lcol:	36 ft
Column diameter, Dcol:	6 ft
Cover thickness, cover:	6 inch
Longitudinal-steel ratio, rhoL:	1.5%
Superstructure weight, Weight:	3,000 lb
Nominal Concrete Compressive Strength, Fc:	5,500 psi
Nominal Steel Yield Strength: Fy:	60 ksi



note

- you can also use the index tab to search specific commands



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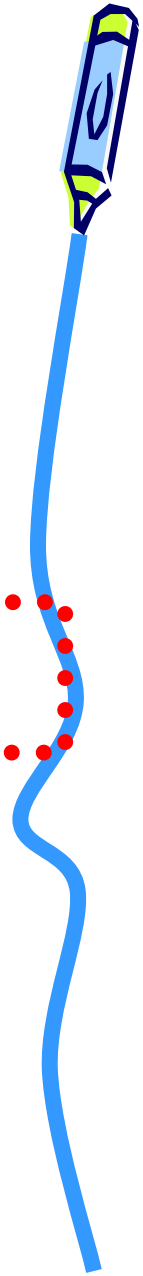
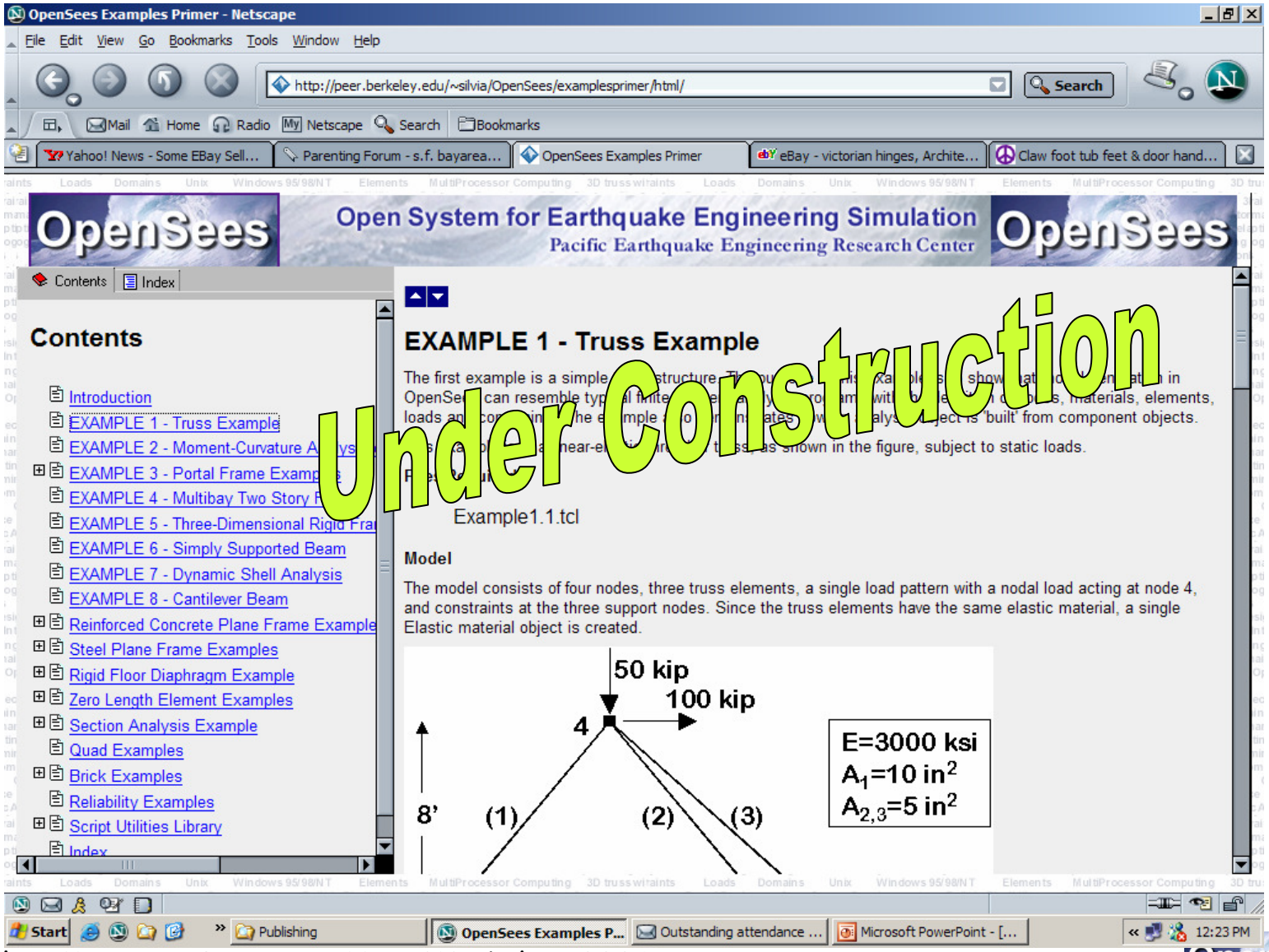


OpenSees examples manual



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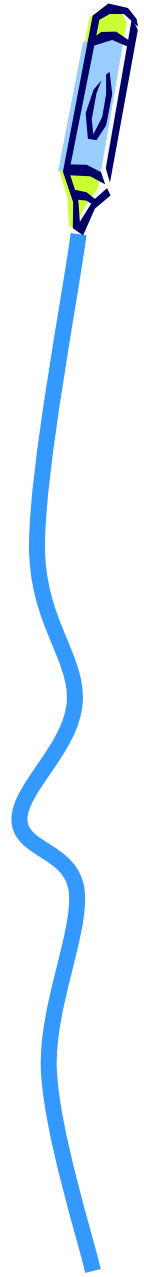
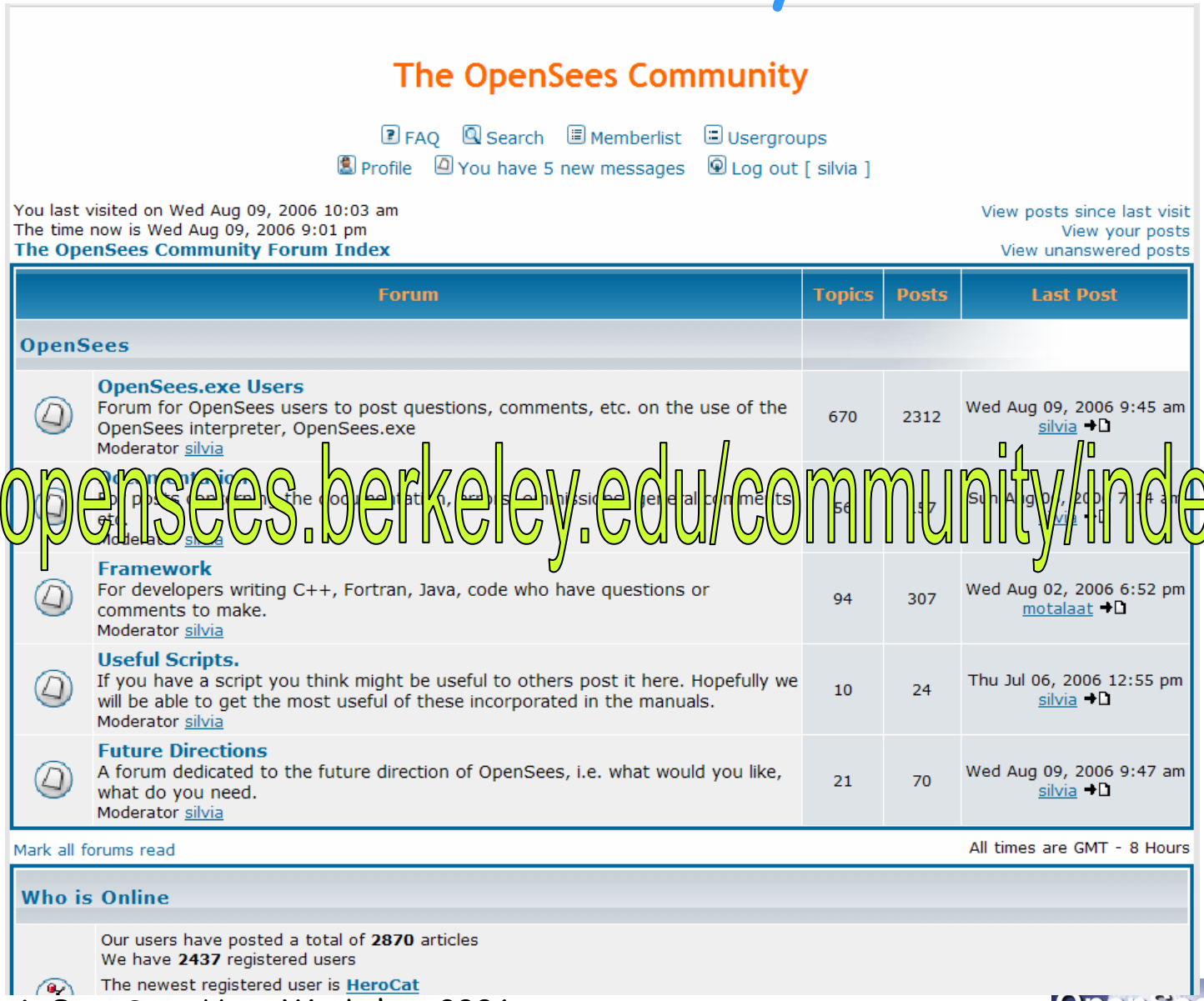


trying to redirect to:

OpenSees Community Forum



The OpenSees Community

FAQ Search Memberlist Usergroups
Profile You have 5 new messages Log out [silvia]

You last visited on Wed Aug 09, 2006 10:03 am
The time now is Wed Aug 09, 2006 9:01 pm
The OpenSees Community Forum Index

View posts since last visit
View your posts
View unanswered posts

Forum	Topics	Posts	Last Post
OpenSees			
OpenSees.exe Users Forum for OpenSees users to post questions, comments, etc. on the use of the OpenSees interpreter, OpenSees.exe Moderator silvia	670	2312	Wed Aug 09, 2006 9:45 am silvia
Framework For developers writing C++, Fortran, Java, code who have questions or comments to make. Moderator silvia	94	307	Wed Aug 02, 2006 6:52 pm motalaat
Useful Scripts. If you have a script you think might be useful to others post it here. Hopefully we will be able to get the most useful of these incorporated in the manuals. Moderator silvia	10	24	Thu Jul 06, 2006 12:55 pm silvia
Future Directions A forum dedicated to the future direction of OpenSees, i.e. what would you like, what do you need. Moderator silvia	21	70	Wed Aug 09, 2006 9:47 am silvia

Mark all forums read

All times are GMT - 8 Hours

Who is Online

Our users have posted a total of **2870** articles
We have **2437** registered users
The newest registered user is **HeroCat**

five forum categories

Forum	Topics	Posts	Last Post
OpenSees			
OpenSees.exe Users Forum for OpenSees users to post questions, comments, etc. on the use of the OpenSees interpreter, OpenSees.exe Moderator silvia	670	2312	Wed Aug 09, 2006 9:45 am silvia
Documentation For posts concerning the documentation, errors, ommissions, general comments, etc. Moderator silvia	56	157	Sun Aug 06, 2006 7:14 am silvia
Framework For developers writing C++, Fortran, Java, code who have questions or comments to make. Moderator silvia	94	307	Wed Aug 02, 2006 6:52 pm motalaat
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very busy message board

OpenSees.exe Users

Moderator: silvia

Users browsing this forum: silvia

Goto page 1, 2, 3 ... 12, 13, 14 Next

newtopic The OpenSees Community Forum Index -> OpenSees.exe Users

Mark all topics read

Topics	Replies	Author	Views	Last Post
model buckling of bracing	1	saeedmov	16	Wed Aug 09, 2006 9:45 am silvia
aditional nodes	5	Fakhraddin Ghahremani	50	Wed Aug 09, 2006 9:43 am silvia
compiling question	8	ahmetalperparker	147	Wed Aug 09, 2006 3:11 am ahmetalperparker
Convergance Problem!	2	azari	54	Tue Aug 08, 2006 6:04 am QI
Periods and modes for 3 story frame	0	HBP	21	Mon Aug 07, 2006 5:38 pm HBP
1 bay 2 story steel frame	2	choi se woon	45	Mon Aug 07, 2006 4:20 pm choi se woon
The meaning of "integration point"	1	wujianqiu	36	Sat Aug 05, 2006 8:33 am silvia
Error having rigidLinks and rigidDiaphrags in the same model	1	Aris	29	Fri Aug 04, 2006 9:42 am fmk
recorders for quad elements	1	endryus	29	Thu Aug 03, 2006 11:57 am fmk
parallel processing	3	ahmetalperparker	61	Thu Aug 03, 2006 9:29 am ahmetalperparker
problems with u-p-U & u-p elements	1	Shahir	76	Wed Aug 02, 2006 2:38 pm Boris

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annual workshop announcement

OpenSees Days 2006

Open System for Earthquake Engineering Simulation

PEER and NEESit announce:

The OpenSees User Workshop.....Monday, August 14, 2006

The OpenSees Developer Workshop.....Tuesday, August 15, 2006

The OpenSees Developer Symposium.....Wednesday, August 16, 2006

ABOUT THE EVENT

The OpenSees User Workshop – The annual one-day workshop on how to use OpenSees. The workshop is intended for both beginning and intermediate users.

The OpenSees Developer Workshop – A one-day workshop for beginning and intermediate developers. The workshop will focus on how to introduce a new material and a new element into the OpenSees framework with hands-on exercises.

The OpenSees Developer Symposium – A one-day symposium with presentations and discussions of on-going development of the OpenSees framework. Presentations will be made by the OpenSees team as well as by current developers of OpenSees.

Students, researchers, and practitioners are welcome to attend any of the days. Registration is free, lunch is provided, but space is limited. Registration closes on August 1, 2006

VENUE / LOCATION

PEER Classroom, Building 454

Richmond Field Station -
University of California, Berkeley
1301 South 46th Street
Richmond, California 94804-4698

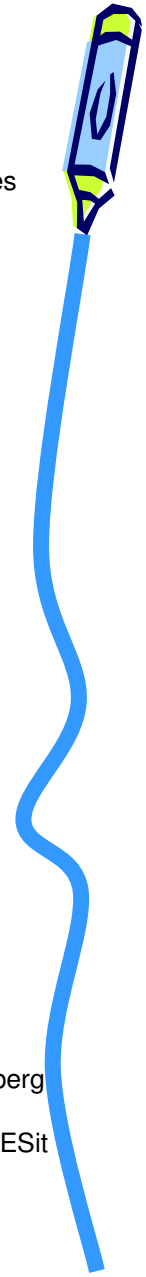
For a map and driving directions, please visit:

http://peer.berkeley.edu/PEERCenter/Contact/maps.html

For more information and to register on-line visit:
http://opensees.berkeley.edu

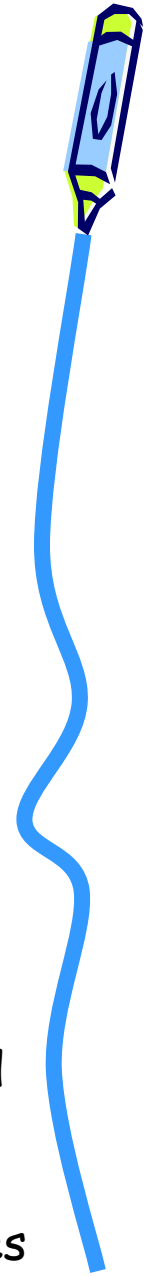
user workshop agenda

Welcome and Introduction to OpenSees & NEESit Simulation	– Gregory L. Fenves
Getting Started with OpenSees	– Frank McKenna
Introduction to the OpenSees User Resources	– Silvia Mazzoni
Structural Models I (Parameter Definition, Nodes, Constraints, Materials, Sections & Elements, Block & Region, Geometric Transformation)	– Silvia Mazzoni
Structural Models II (Recorders, Loads)	– Silvia Mazzoni
Introduction to Analysis Commands (System, Integrator, Algorithm, Numberer Analyze)	– Frank McKenna
When Things Go Wrong: Modifying the Script in the Event of Non-Convergence	– Frank McKenna
Geotechnical and Solids in OpenSees	– Boris Jeremic
Structural Example – Reinforced-Concrete Frame: Building the Model	– Silvia Mazzoni
Structural Example – Reinforced-Concrete Frame: Static, Cyclic and Dynamic Analyses, Multiple-Support Excitation	– Frank McKenna
Parameter Studies Using OpenSees	– Silvia Mazzoni
Geotechnical and Solids Examples	– Boris Jeremic
OpenSees Navigator	– Andreas Shellenberg
OpenSees & NEESit	– Holly Hervey, NEESit
Questions and Wrap-up Discussion	– Gregory Fenves



OpenSees NEESit

developer workshop agenda



- Installed-software check (make sure softare is installed properly)
- Welcome to OpenSees Developer's Workshop, Introduction to object-oriented programming
- Introduction to C++ programming
- Introduction to OpenSees software architecture:
    - Model builder, recorders, domain & analysis
- Uniaxial material interface
- Implementation exercise of a uniaxial material
    - Participants will develop new material, add material into OpenSees and test it using a tk script
- Review of Implementation exercise for uniaxial material
- Domain classes & how they interact
- Element interface
- Analysis classes & how they interact.
    - Trace through what happens when 'analyze' is invoked in the interpreter. When element methods, 'update,' 'commit,' 'getTangent,' and 'getResistingForce' are invoked
- Implementation of a new element – set up exercise as homework
    - Participants will develop new element and add element into OpenSees

developer symposium agenda

Introduction and Symposium Goals	Gregory L. Fenves, UC Berkeley
Features and Capabilities of version 1.7.2; Current Status of OpenSees; Development Process	Frank McKenna, UC Berkeley
Parameter Updating	Michael H. Scott, Oregon State U
Cyclic uniaxial material model for reinforcing steel bars	Jon Mohle, UC Davis
Modeling Instability of Beam-Column Elements	Patxi Uriz, Exponent
Performance Modeling Strategies for Modern Reinforced Concrete Bridge Columns	Michel Berry, U Washington
Development of Modeling Tools	Silvia Mazzoni, UC Berkeley
Collapse Simulation of RC Frame Buildings	Curt Haselton, Stanford U
SFSI Implementations in OpenSees	Christine Goulet, UC Los Angeles
Frictional 3D Beam-to-Solid Contact Formulation for OpenSees	Peter Mackenzie-Helnwein, U Washington
Advanced Geotechnical Capabilities of OpenSees	Boris Jeremic, UC Davis
OpenSees, VEES, and XML: Visualization and Model Archiving	Alisa Neeman, UC Santa Cruz
A User-Friendly Finite-Element Pile Analysis Interface	Jinchi Lu (UC San Diego) & Zhaohui Yang (URS Corporation)
OpenSees & Hybrid Simulation	Andreas Schellenberg, UC Berkeley
Wrap-Up Discussion and Closing Remarks	Gregory L. Fenves

Questions, or statements!

The OpenSees Community Forum:

http://opensees.berkeley.edu/community/index.php

which can be accessed from:

http://opensees.berkeley.edu