NEEScentral Users Guide 1.7

1. Overview

NEEScentral is a web-based portal that provides members of the NEES community access to the NEES data repository. By providing a centralized location for the long-term storage of data and associated details about the facilities and equipment involved in producing those data, NEEScentral enables those in the earthquake engineering community to inform new research, validate new simulation models, and inform industry practice. Data in the repository is user-managed on a project-by-project basis. Structured projects make extensive use of metadata fields that store the information needed to reproduce an experiment. Once these metadata fields are populated, an experiment report may be generated to inform collaborators of experiment progress. You may also upload single files or entire directories of data to the repository, then share the data with selected collaborators at your discretion. Visible projects can be searched to help you find and connect with potential collaborators.

2. Getting Started

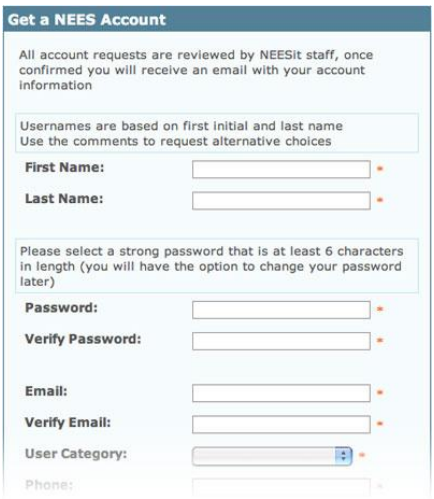
2.1 Software Requirements

The NEEScentral portal requires the use of a standards-compliant browser such as Mozilla Firefox 1.0+, Internet Explorer 6.0+, Safari 1.0+, or Opera 7.0+. Additionally, NEEScentral makes significant use of Java. J2SE version 1.5+ is recommended. Please visit our Java Installation Guide if you are unsure whether your computer meets this requirement.

2.2 Getting an Account and Logging In

NEEScentral utilizes your NEES account login to grant access to protected resources. If you do not have a NEES account, click the *Register* button within the login area of NEEScentral.

To request an account you must provide your first and last name; a strong password that is at least six characters in length; the organization with which you are affiliated; your email address; user category chosen from *Researcher*, *Facility Staff*,*Practitioner*, *International Collaborator*,*Governance*, or *Other*; phone number; and a postal or physical address. You may optionally provide your fax number. An optional comments field can be used to request a specific username.



Once you've filled in the form, click the *Submit Request* button. Your account request will be forwarded to NEESit staff who will evaluate and confirm the supplied information, create an account for you, and send you an introductory email. Once you receive this email you may access NEEScentral by entering your newly established username and password in the login area.

With a NEEScentral account you may:

- Browse the NEES demonstration project.
- Search visible NEES research projects.
- Organize and manage data in a new project.
- Generate experiment reports for experiments in which you have been granted sufficient user privileges.

2.3 Forgotten Username or Password

If you enter an incorrect username and password combination you are redirected to a page that allows you to reenter your login information, request an account, or request a password reminder. If you've forgotten your username or password, click the *Forgot Password* button and provide your last name and email address. If your last name and email address are an exact match with the information in our database you will receive an automatically generated email containing your username and a temporary password. If the information you submit does not exactly match what we have on file you will be contacted by NEESit user support. Once you have received your username and temporary password you should log in and change your password.

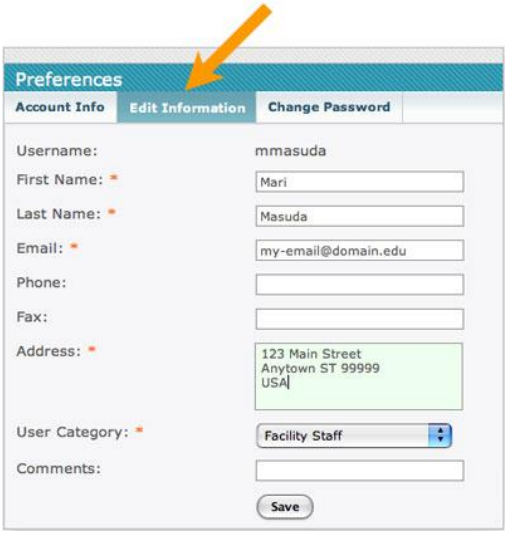
3. Managing Your Account

3.1 Viewing Your Account Information

Once you've successfully logged in, you can view your account information by clicking on*Preferences* within the login area.

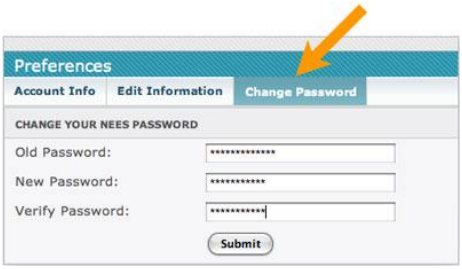
3.2 Changing Your Account Information

To change your first or last name, email address, phone number, fax number, address, or user category, click on the *Edit Information* tab. Once you make changes, click the *Save Changes* button. You are not allowed to change your username.



3.3 Changing Your Password

You may change your password by clicking on the *Change Password* tab. NEESit recommends that you change your password on a regular basis to prevent unauthorized access to your account. If you think your password has been compromised, you should change it immediately and then notify NEESit staff as soon as possible at it-support@nees.org.



4. Facilities

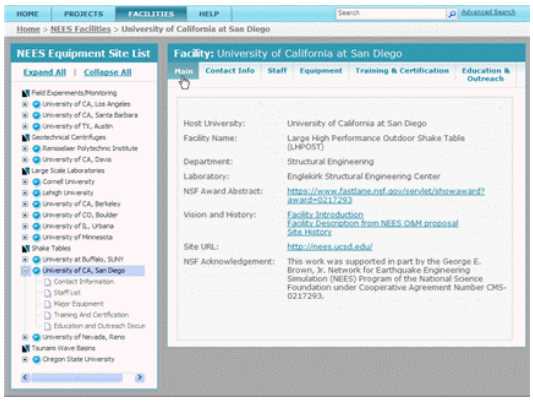
The *Facilities* tab allows you to easily find detailed information about NEES equipment sites. Facility equipment data can be linked to your project to help you automatically populate data fields with information such as sensor models and serial numbers.

Clicking on the *Facilities* tab displays a map that highlights the locations of NEES equipment sites. A list on the right hand side of the page displays the names of the facilities and is sorted by equipment type. Clicking on a location on the map or on a name in the list allows you to see detailed information about the selected facility.

4.1 Basic Information

The *Main* tab displays basic information about a facility, including:

- **Host University:** The name of the institution with which the facility is affiliated.
- **Facility Name:** The name of the facility.
- **Department:** The academic department with which the facility is affiliated.
- **Laboratory:** The laboratory with which the facility is affiliated.
- **NSF Award Abstract:** A link to information about the facility's National Science Foundation award.
- **Vision and History:** Links to documents that provide background information about the facility.
- **Site URL:** A link to the facility's web site.

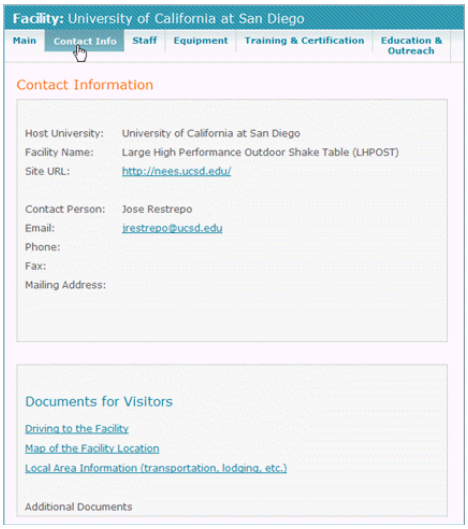


Facility administrators can edit this information by clicking on the *Edit Facility* button that appears in the lower right-hand corner of the *Main* panel. The edit button is only visible to facility administrators.

4.2 Contact Information

The *Contact Info* tab displays the name, email address, telephone number, and mailing address of the facility's contact person. The host university, facility name, and facility web site URL are also displayed. Clicking on the contact person's email address allows you to send them a message.

Additional information—including driving directions to the facility, a map of the facility's location, and information about lodging, transportation, and other local amenities—may also be available for download. These documents are uploaded by facility staff, not NEESit, so they may not be available for every facility.

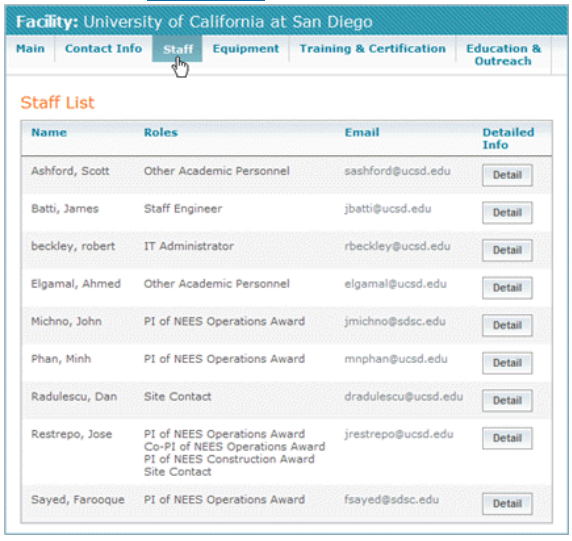


Facility administrators can upload documents by clicking the *Add* or *Edit* links next to a document's name. The links are only visible to facility administrators who are logged in. The contact person's information is automatically displayed based on the *Site Contact* role that can be assigned on the *Staff* tab.

4.3 Staff

The *Staff* tab displays the name, role(s), and email address of each person affiliated with the facility. Clicking on a person's email address allows you to send them a message.

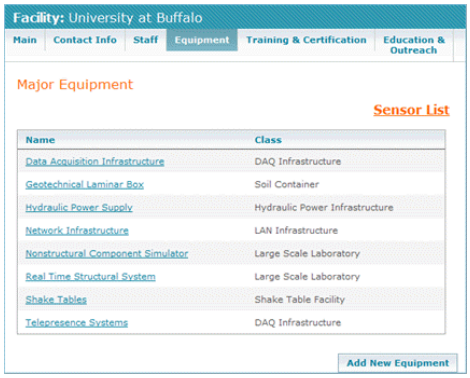
Facility administrators may edit the staff list in the same way that project and experiment membership lists are handled. See section 7.3. Use the *Site Contact* role to designate the person whose contact information is displayed.



Click the *Detail* button to see additional information, including a picture (users must upload their own picture).

4.4 Equipment

The *Equipment* tab displays a list of major equipment and sensors available at the facility. Clicking on a piece of equipment displays detailed information about it and provides links to downloadable documents containing further information. If the piece of major equipment is comprised of multiple subcomponents, details about the subcomponents can be obtained by clicking on the name of the subcomponent in which you are interested.

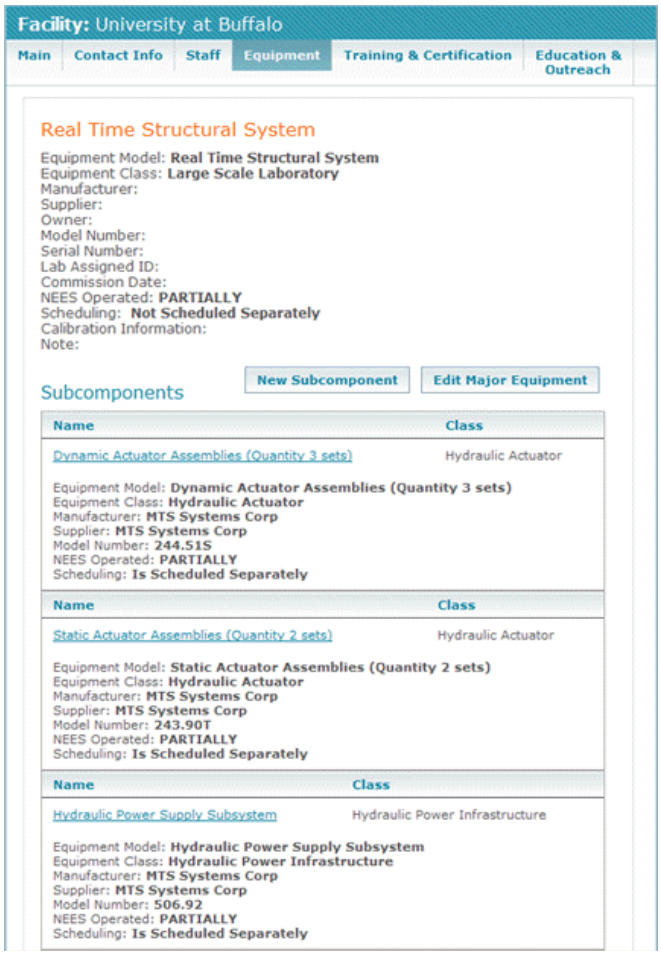


Details about the equipment are supplied by facility staff members and may include:

- **NEES Operated:** *Fully* means the item is available for NEES research projects without recharge fees. *Partially* and *No* mean the item is available for NEES research, but may be subject to recharge fees and scheduling constraints determined by the equipment owner.
- **Equipment Class:** Basic type of equipment.
- **Manufacturer:** Name of the equipment manufacturer. The name of a contact person and/or the manufacturer's location may also be noted.
- **Supplier:** Name of the supplier from which the equipment was obtained.
- **Owner:** Owner of the equipment, if other than the facility itself.
- **Model Number:** Equipment's model number.
- **Serial Number:** Equipment's serial number.
- **Commission Date:** Equipment's commissioning date.
- **Calibration Information:** Information about the equipment's calibration. The facility may have also made additional files pertaining to calibration available for download.
- **Note:** Any additional information about the equipment.
- **Lab Assigned ID:** Unique number or name assigned to the piece of equipment by the facility.
- **Additional Specification File:** Downloadable file containing addition equipment specifications.
- **Manufacturer's Document:** Downloadable documentation provided by the equipment's manufacturer.
- **Design Consideration Document:** Downloadable document describing features, limitations, and other safety or design considerations relevant to NEES use of the equipment.

- **Subcomponents Document:** Downloadable document naming all subcomponents of the piece of equipment that play important roles in determining the equipment's specifications. For example, shaking table performance depends on the hydraulic pump capacity.
- **Interface Document:** Downloadable document containing descriptions or diagrams showing how the equipment works together with other pieces of equipment.
- **Documentation Files:** Other downloadable files containing information about the equipment.

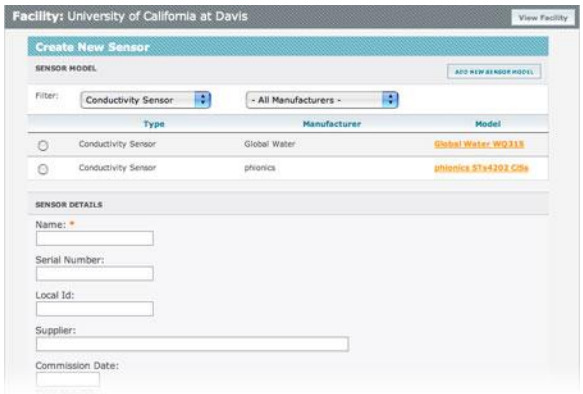
Facility administrators may edit the equipment list by clicking the *Add Equipment* button or clicking on the name of a piece of equipment and then clicking the *Edit Component* button. Subcomponents may be edited in a similar fashion by clicking on the name of the subcomponent and then clicking the *Edit Component* button.



4.4.1 Sensors

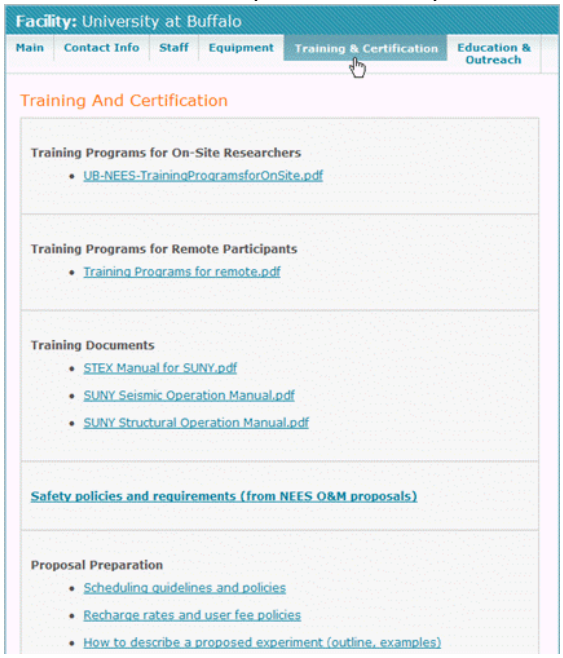
Each facility's equipment list includes a sensor list. Facility administrators can enter and save information about their facility's sensors to the sensor list. The information in the list is made available to researchers who have associated one or more facilities with an experiment so they may quickly and accurately indicate which sensors were used in an experiment.

To define a new sensor or edit an existing sensor, facility administrators should click on the *Equipment* tab of their facility, click on *Sensor List*, and click the *Add New Sensor* button to create a new sensor, or click on the name of an existing sensor then click the associated *Edit Sensor* button. Edit the sensor's information and click the *Save Changes* button to save your changes.



4.5 Training and Certification

The *Training and Certification* tab provides links to facility-provided downloadable documents that describe training and certification programs, safety policies, scheduling guidelines, and other procedures.
Facility administrators can upload or edit documents by clicking the *Add* or *Edit/Delete* links next to a document's name. The links are only visible to facility administrators who are logged in.



4.6 Education and Outreach

The *Education and Outreach* tab provides links to facility-provided downloadable documents that describe education and outreach programs.

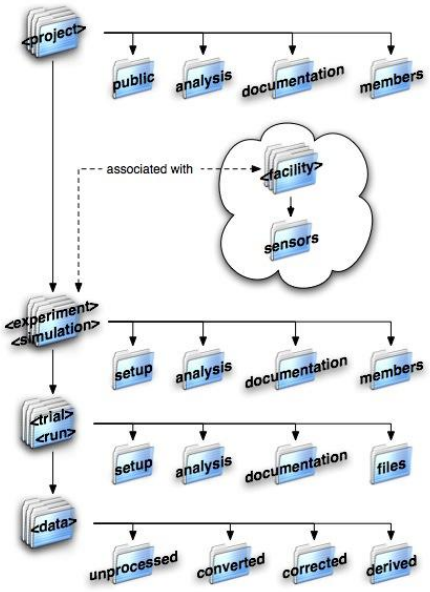
Facility administrators can upload or edit documents by clicking the *Add* or *Edit/Delete* links next to a document's name. The links are only visible to facility administrators who are logged in.

5. Structuring Your Research Data

NEEScentral offers two types of projects: structured and unstructured. Research projects should use the structured project type because data is stored in an organized manner within a database, greatly enhancing searchability. Projects whose main purpose is to share non-earthquake engineering research related documents (e.g., policies) should use the unstructured project type. Unstructured projects do not implement the metadata fields used in structured projects, nor do they contain experiments and trials.

Because unstructured projects are just that, their internal organization is left to your discretion and is not discussed in this user's guide. Please refer to section 11 to learn how to upload and manipulate files.
For structured projects, data is stored in the files you upload and also as metadata—data about your data—that greatly enhances searchability. Uploaded documents should be saved in the appropriate folder (i.e., documentation, analysis, etc.) at the highest vertical level of the file structure, shown below, where they are still relevant horizontally. For example, a document that descibes the objectives for all experiments in a project can go in the project-level documentation folder. Similarly, multimedia files such as still images or video should be placed at the highest vertical level of the file structure where they are still relevant horizontally. For example, video footage of an experiment taking place should go in the appropriate data folder, while pictures or video of the general test site or of the experiment being set up can be put into the experiment- or trial-level folders. The project-level folder may be used for videos, slideshows, or presentations of material that covers your project as a whole. Researchers should use their discretion to determine which location in the file structure makes the most sense for storage of their uploaded documents.

Depicted below is the conceptual organization of structured projects. Click on a folder to learn more.

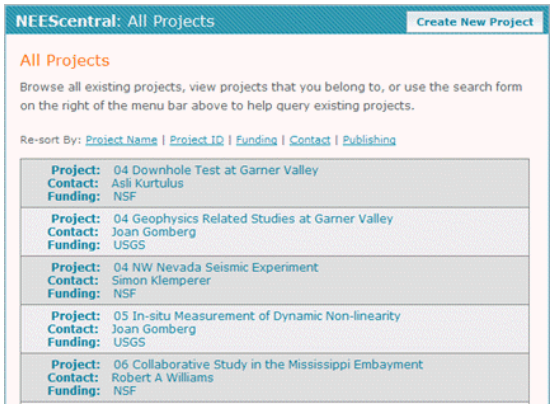


6. Navigating NEEScentral

6.1 Finding Existing Projects

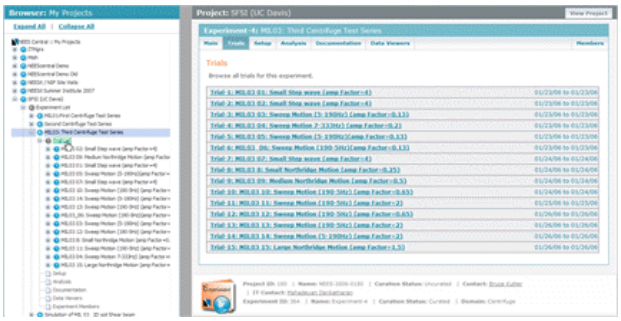
6.1.1a Browsing Visible Projects

Clicking *Projects* (if you are not logged in) or *All Projects* (if you are logged in) on the main navigation bar displays a list of all projects that are visible to you. A project is visible to you if it is publicly available, if you are logged in and the project is available to all NEES users, or if you are logged in and are a member of the project. Clicking *My Projects* once you have logged in displays only those projects in which you have membership. You may sort the displayed list by project name, funding source, or contact person.



6.1.1b Project Tree Browser

The Project Tree Browser provides an easier method to navigate through NEEScentral using a Windows Explorer style of interface. It appears on the *All Projects* page and the *My Project*page. Click the expand and collapse buttons or the project, experiment, and trial titles to easily navigate through the NEEScentral hierarchy.



6.1.2 Searching Visible Projects

You may also search visible existing projects by using the search box located on the main navigation bar. If your search term is found in one of the following fields in the database, a list of matching projects is displayed:

- Facility formal name (e.g., Large High Performance Outdoor Shake Table), short display name (e.g., UCSD), description, department, or laboratory.
- Organization name, description, or URL.
- Project formal title (e.g. Collaborative Research: Demonstration of NEES for Studying Soil-Foundation-Structure Interaction), nickname (e.g., NEES Demonstration: SFSI), description, NEES ID number (e.g., NEES-2006-111113), contact name, or sysadmin name.
- Experiment title, description, objective, or acknowledgement.
- Trial title, description, or objective.

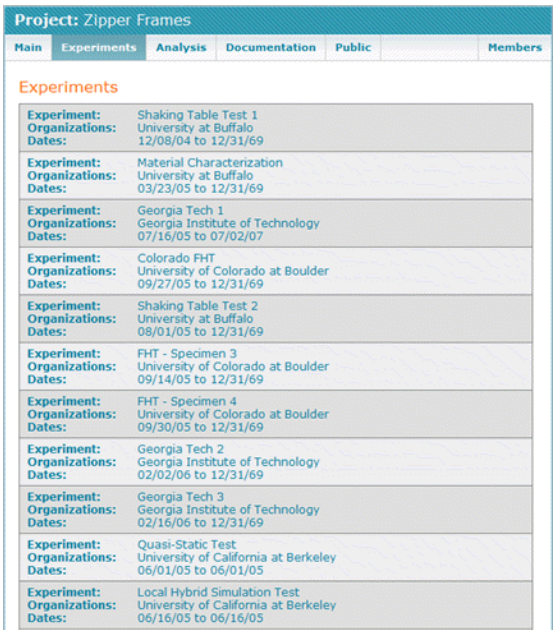
6.1.3 Viewing Project Information

To view top-level information about a project, click on its title. If you're a member of the selected project you'll be able to access its contents. If you're not a member you can only view the publicly available files associated with the project and will be given the opportunity to send a membership request to the project's administrator.

6.2 Finding Experiments and Simulations

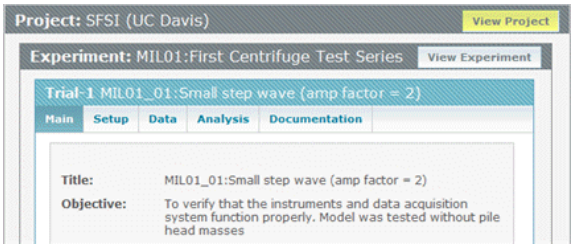
6.2.1 Initially

After you've opened a project as described in section 6.1.3, click on the *Experiments* tab within the project navigation bar. You'll be presented with a list of experiments and simulations. Click on the name of an experiment to access that experiment's details.



6.2.2 Returning to the List of Experiments and Simulations

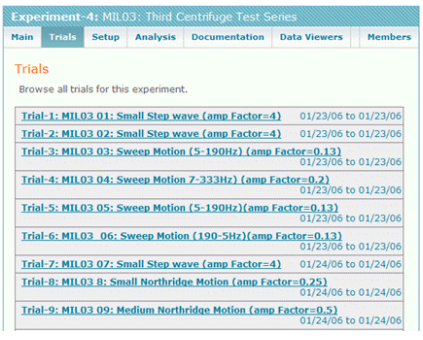
To quickly return to the list of all experiments and simulations from anywhere within a project, click the *View Project* button in the upper right-hand corner of the project window. Or, click the project's name in the tree browser. Once you've returned to the main project view, click the*Experiments* tab within the project navigation bar as described above in section 6.2.1.



6.3 Finding Trials and Runs

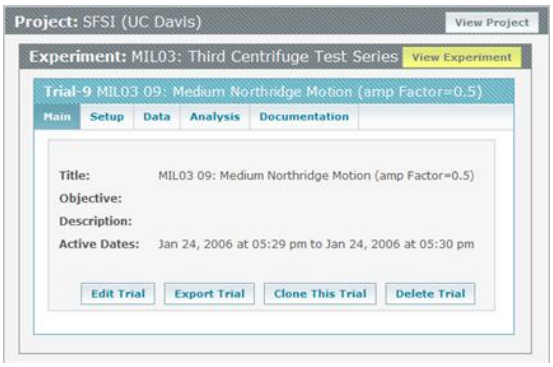
6.3.1 Initially

After you've opened an experiment as described in section 6.2.1, click on the *Trials* or *Runs*tab within the experiment navigation bar. You'll be presented with a list of trials associated with the experiment. Click on the name of a trial to access that trial's details.



6.3.2 Returning to the List of Trials or Runs

To quickly return to the list of all trials or runs associated with the current experiment or simulation, click the *View Experiment* button in the upper right-hand corner of the experiment window. Once you've returned to the main experiment view, click the *Trials* or *Runs* tab within the experiment navigation bar as described above in section 6.3.1.



7. Projects

7.1 Creating a New Project

Any NEES user can create and manage a project. After logging in to NEEScentral, select either *My Projects* or *All Projects* from the main navigation bar and then click the *Create New Project* button.

You must provide some basic information about your project before clicking the *Create Project* button. Required fields are marked with an orange asterisk on the form.

- **Project Type:** A **structured** project is used to store data in an organized manner, while **unstructured** projects allow for files to be organized by project members. All NEES-funded research projects must use the structured project type. Because unstructured projects store data in a flexible hierarchy rather than a database, performing structured searches on unstructured projects may not return any results. To enhance searchability, please store your earthquake engineering research data in a structured project whenever practical.
- **Formal Title:** This is the official title of your project. For NSF-funded projects, use the same title as noted in the NSF grant.
- **Nickname:** This is the short, informal title of your project and is what is displayed in the list of *My Projects* or *All Projects*.
- **Description:** This is a high-level description of your project and its objectives.
- **Funding Organization:** Use the radio button to indicate whether your project is funded by the NSF. If it is funded by an organization other than the NSF, please provide its name.
- **Funding Organization Project ID:** If your funding organization has given your project an ID number, please provide it here.
- **Project Visibility:** While only project members have access to the files within a project, the visibility controls who can see the existence of the project. If the visibility is set to **Members**, only project members can see that the project exists and it will be hidden to all other users. Any NEES user logged in to NEEScentral will be able to see a project whose visibility is set to **Users**. Finally, **Public** projects are visible to the general public, including non-authenticated visitors to NEEScentral.

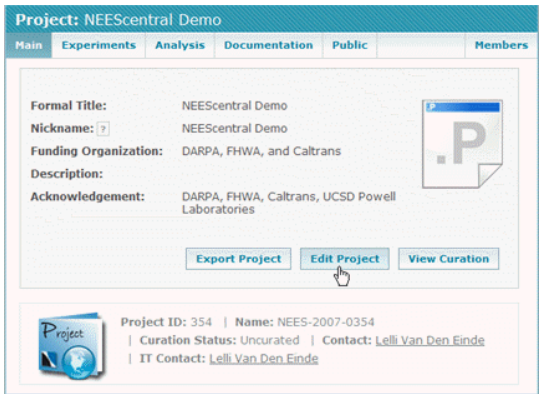
- **NEES Status:** Any project that is funded by the NSF/NEES initiative should be designated as **NEES**. All other projects are considered **Non-NEES**.
- **Your Role:** Please select your role from the choices provided.
- **Contact Name:** This is the primary contact person who will deal with inquiries about the project.
- **Contact Email:** Enter the email address of the primary contact.
- **Sysadmin Name:** This is the person who will be dealing with project-specific administrative issues, such as adding project members. If this is not set, the primary contact is used.
- **Sysadmin Email:** This is the email address of the person who is acting as your project's sysadmin. If this is not set, the primary contact is used.
- **Start Date:** Date when a project first incurs a charge against its funding source or when any resources are initially employed on a project after it has received approval. Non-experimental projects may leave this field blank.
- **End Date:** Date when a project has been published in the form of a standard electronic journal format with inclusion of its experiment and research data components. Non-experimental projects and ongoing experimental projects may leave this field blank. The end date may be updated at a later date.

Once your project has been created you become a member of the project and are given administrator rights, which means that you may view, create, edit, and delete experiments and trials, as well as grant permissions to other project members.

7.2 Editing Project Information

The information you supplied when you created your project can be edited at any time by clicking the *Edit Project* button on the project screen. Only project members with editing privileges may edit a project.
When editing a project, a new option appears (that was not available when the project was created):

- **Publishing Status: Published** projects are made publicly available so that anyone can view their contents. Use this option to share your research with the broader earthquake engineering community. **Unpublished** projects rely on their membership roles and permissions settings to determine who can access the project's contents.



7.2.1 Export Project Information

Download all of a project's metadata and associated files into one easy-to-manage zip file by simply clicking the *Export Project* button.

7.3 Managing Project Members

To manage the members of your project and edit their privileges, select the *Members* tab on the project screen. You'll see a list of current project members and a pull-down menu with a button labeled *Grant Membership*.

7.3.1 Roles and Permissions

Project administrators should assign roles and access permissions to each project member. Each pre-defined role (e.g., principal investigator) is associated with a default set of permissions that control how the member is allowed to interact with NEEScentral. These default permissions are easily customized by project administrators to allow for flexible access.

The NEEScentral access permissions are defined as follows:

- **View** is read-only access to metadata within projects, experiments, trials, and repetitions.
- **Create** is the ability to create experiments, trials, and repetitions.
- **Edit** is the ability to modify metadata.
- **Delete** is the ability to delete a trial.
- **Grant** is the ability to add and remove members from a project, and change their access permissions.

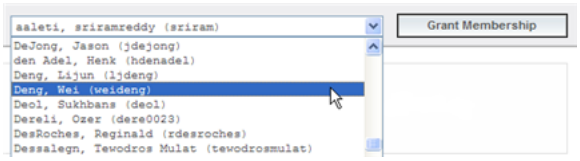
Pre-defined roles and their associated default access permissions are as follows:

	View	Create	Edit	Delete	Grant
Principal Investigator	✓	✓	✓	✓	✓
IT Administrator	✓	✓	✓	✓	✓
Co-PI	✓	✓	✓	✓	
Grad Student	✓	✓	✓	✓	
Collaborator	✓				
Curator	✓				

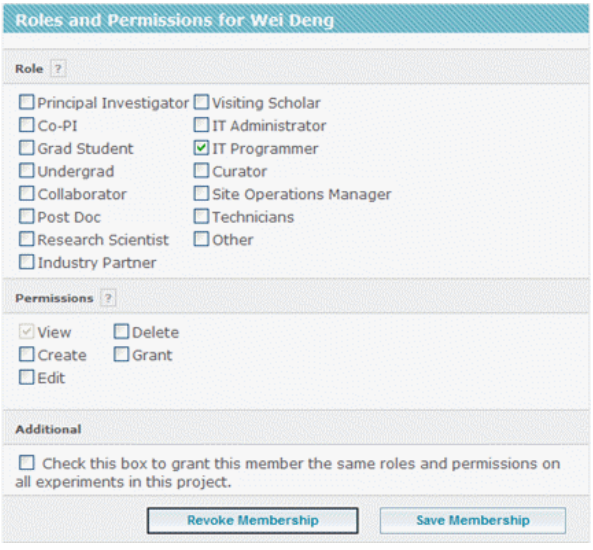
	View	Create	Edit	Delete	Grant
Industry Partner	✓				
IT Programmer	✓				
Other	✓				
Post Doc	✓				
Research Scientist	✓				
Site Operations Manager	✓				
Technicians	✓				
Undergrad	✓				
Visiting Scholar	✓				

7.3.2 Adding Members To Your Project

To add a new member to your project, choose the person's name from the pull-down menu and click *Grant Membership*. If you do not see a person's name in the list of users it means they do not currently have a NEES account. You should have them request an account at https://central.nees.org/acct/. Once their request has been handled by NEESit staff you will see their name in the user list and be able to add them to your project.



Select the role(s) the person you are adding will play in your project and customize their associated permissions, as required. The new member is given the default access permissions associated with their assigned role, as described in section 7.3.1. To customize a member's access permissions, see section 7.3.3.



7.3.3 Editing and Deleting Members

To edit or revoke the membership of existing project members, click the name of the person you'd like to edit in the list of current project members. To edit roles or permissions, make the desired changes and click the *Save* button. To remove the person from your project's membership list, click the *Revoke Membership* button. If you have *grant* access and are not the only person with full administrative rights (i.e., *view*,*create*, *edit*, *delete*, and *grant*) you may edit or delete yourself. However, if you are the only project member with administrative rights you will not be able to edit or delete yourself. This is to prevent projects from becoming "orphaned" and left without an administrator.

7.3 Analysis

A project may have an entire simulation component that investigates overall project-level performance (i.e., system-level analyses).

The project-level analysis folder can contain items such as:

- Input files, output files, and any assumptions made for the simulations. These files should have metadata attached that indicates which simulation tool was used and the version. It may be useful to organize these files by creating subdirectories such as "pre-test simulations," "parameter study investigations," or "postdictions."
- Any design parameter studies that help finalize the design details for the experiments/trials.
- Predictions for experiments/trials.
- Comparisons of simulations with experimental data. Note that this information may be better suited to the *Derived Data* folder (described below in section 10.4), depending on when the analytical study occurred in relation to the overall experimental program. It is left to your discretion to decide which folder is most appropriate. As an example, suppose several experiments were conducted to investigate the seismic response of a two-story woodframe house. Many pre-/post-dictions were conducted in direct relationship to the experiment. At a later stage in the project, a full system-level parameter study was conducted to investigate the effects of modifying a particular aspect of the woodframe house. The parameter study was validated and compared with the data from the project experiments. In this case it may be more appropriate to place the comparison results in a subdirectory of the project-level *Analysis* folder, rather than one of the *Derived Data*folders.

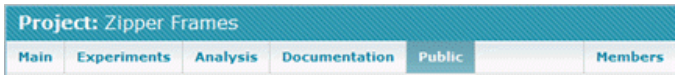
7.4 Documentation

The project-level documentation folder is for files that provide background information about your project.

Sample documents that are appropriate for this level of the hierarchy include the full project proposal; reference papers; conceptual documents; and overviews of the the experimental program, including descriptions of all experiments being conducted, which laboratory each experiment is occuring at, proposed timeline/schedule of experiments, overviews of the analytical program, types of project-level simulations/parameter studies, and any project-level presentations given at meetings, conferences, etc.

7.5 Public

The project-level public folder is for files pertaining to your project that you want to share with the general public. All structured projects, even those whose visibility is set to *Members* or*Users*, have a public folder. If you do not wish to share any documents with the general public, simply leave this folder empty.



8. Experiments and Simulations

Experiments and simulations can be created to easily manage data gathered by structured projects. Unstructured projects may not create experiments or simulations.

8.1 Creating a New Experiment or Simulation

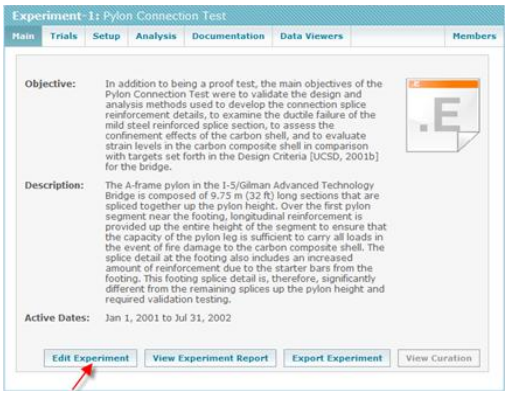
To create a new experiment or simulation, return to the list of all experiments (see section 6.2.2), then click *Add Experiment*. At a minimum, you must provide the title of your experiment and the experiment's domain before clicking the *Save Changes* button.

Experiment metadata includes:

- **Title:** The experiment's title.
- **Experiment Structure: Structured** experiments make extensive use of metadata fields and allow you to create trials and trial repetitions. **Unstructured** experiments do not include trial functionality and are less rigid. Please use the structured experiment type whenever practical.
- **Experiment Domain:** Indicate the general type of equipment used to perform the experiment.
- **Objective:** Describe the main objective of this specific experiment and how it fits into the overall project.
- **Description:** Provide a high-level description of the experiment, such as "Circular columns tested under bi-directional loading."
- **Acknowledgement:** Enter any acknowledgements you'd like to include. In some cases an acknowledgement may be required by your funding organization.
- **Participating Organization:** Associate your experiment with one or more organizations, if applicable.
- **NEES Facility:** Associate your experiment with one or more NEES facilities, if applicable. If your experiment is associated with an equipment site, that facility's equipment and sensor information becomes available to help you populate fields in other areas of NEEScentral.
- **Start Date:** Date that the setup process for the specific experiment begins. This includes specimen construction, special programming, and facility configuration.
- **End Date:** Date that an experiment's trials have all been completed, including the period of time needed for the experiment to vacate the facility.

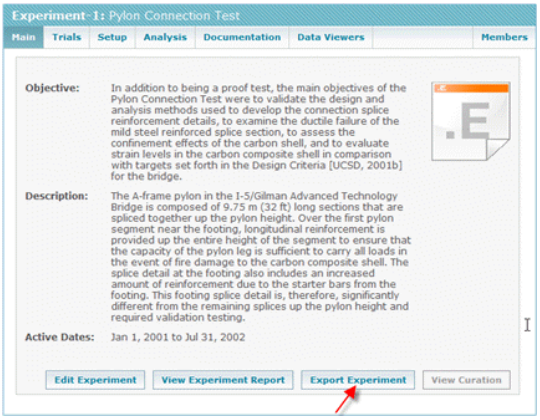
8.2 Editing Experiment or Simulation Information

To edit an experiment, return to the list of all experiments (see section 6.2.2), click on the experiment or simulation that you would like to edit, then click the *Edit Experiment* button.



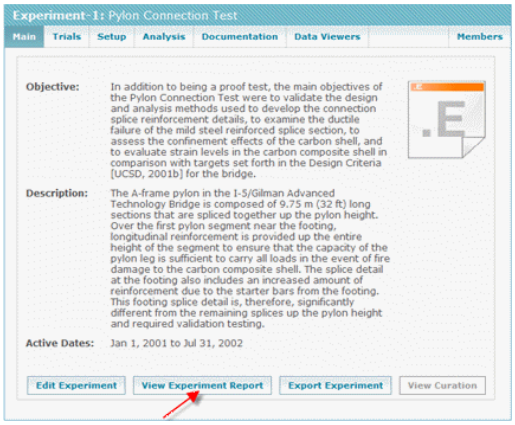
8.2.1 Export Experiment Information

Download all of an experiment's metadata and associated files into one easy-to-manage zip file by simply clicking the *Export Experiment* button.

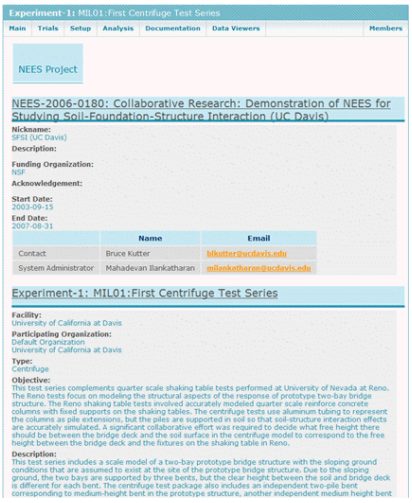


8.3 Viewing an Experiment Report or a Simulation Report

To view an experiment report, return to the list of all experiments (see section 6.2.2), click on the experiment for which you would like to generate a report, then click the *View Experiment Report* button. (This feature is also available for simulations, by clicking the *View Simulation Report* button.)

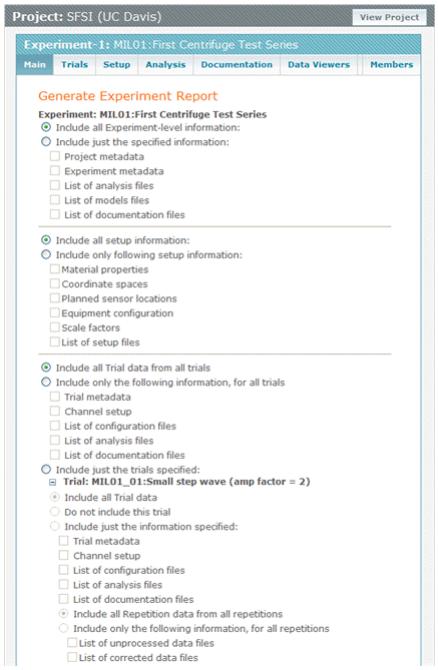


The following picture is an example of an Experiment Report for an experiment by UC Davis. This picture is just part of the first page of an 88-page, formatted report produced automatically by NEEScentral:



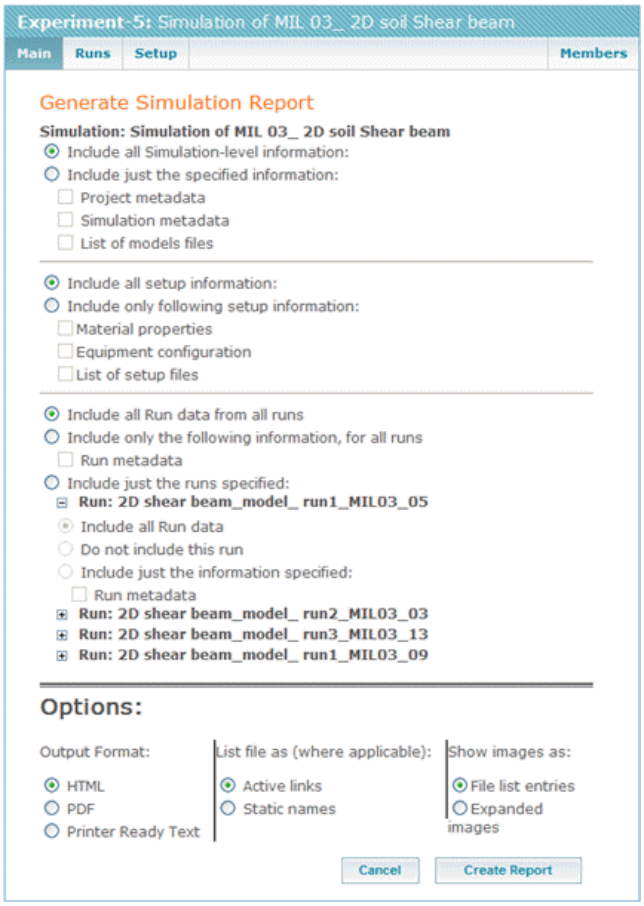
The content of the Experiment Report is customizable. When you run the report, you can decide what information you want to see in the report by selecting from a list of available options, including:

- Experiment-level information (such as project and experiment metadata, and analysis, model and documentation files),
- setup information (such as material properties, coordinate spaces, planned sensor locations, equipment configurations, scale factors, and setup files)
- trial data (such as metadata, channel setup, configuration, analysis and documentation files),
- and repetition data (such as unprocessed, corrected, converted, and derived data files).



The Simulation Report produces a report about a simulation. The content of the Simulation Report is customizable. When you run the report, you can decide what information you want to see in the report by selecting from a list of available options, including information about:

- the project, simulation and models,
- the simulation's setup,
- and the simulation's runs.



The Experiment and Simulation Reports allow for different output file formats, including:

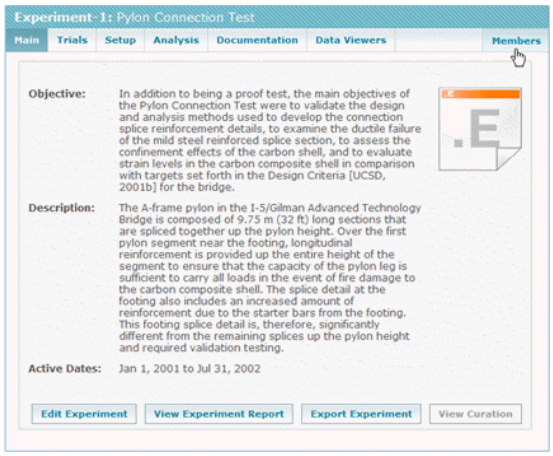
- HTML
- PDF
- printer ready text

The Experiment and Simulation Reports allow for options to (1) link to attachments, (2) expand attachments, or (3) merely list attachment names, in the following specific ways:

- files listed as active links, or as mere static names
- images listed as actual expanded images, or as mere file list entries

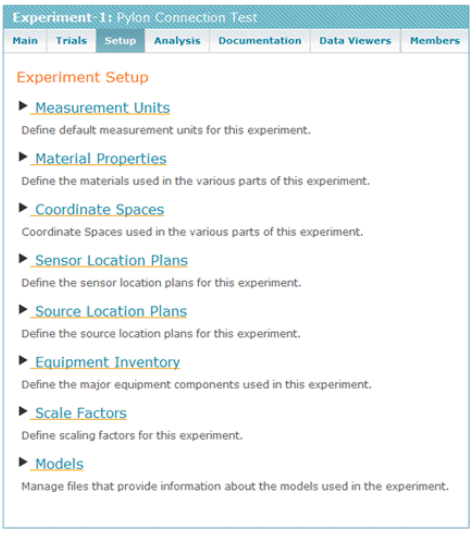
8.4 Managing Experiment or Simulation Members

To manage the members of your experiment or simulation and edit their privileges, select the *Members* tab on the experiment screen. Experiment members can only be selected from the list of people who are already members of the parent project. Aside from this difference, the operation of the experiment membership dialog is the same as the project membership dialog. Refer to section 7.3 for in-depth information about managing memberships.



8.5 Setup

To enter information about your experiment's setup–material properties, coordinate spaces, sensor location plans, source location plans, equipment inventory, scale factors, and models–click on the *Setup* tab. Simulations include information about computer systems, material properties, and model types. To create a new entry, click the appropriate *Create New* button. To edit an existing entry, expand the appropriate section (e.g., coordinate spaces) to reveal a list of existing items, click the name of the item you want to edit, then click the associated *Edit* button.



8.5.1 Measurement Units

Measurement units allows you to set the default measurement units used by NEEScentral. The units selected here are used to pre-populate the drop down menus in the setup areas for material properties, sensor location plans, source location plans, and coordinate spaces.

- **Category:** The category of measurement to which the unit belongs.
- **Default Unit:** The unit of measure used to pre-populate drop down menus in other areas of NEEScentral.
- **Abbreviation:** Standard abbreviation for the selected default unit.
- **Base Unit:** The unit of measure typically used by the category.

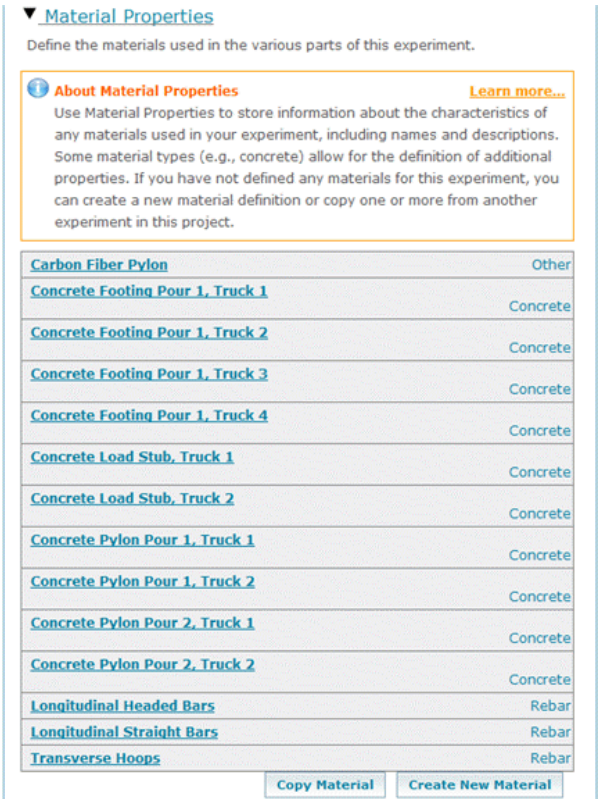
To set the default measurements, click the button labelled *Modify Measurement Units*. For each category, select the desired default measurement unit. Click *Save Changes* to save your changes.

When creating a new material property, sensor location plan, source location plan, or coordinate space, your default measurement units will be used to pre-populate the drop down menus. Units in existing setups will not be changed.

8.5.2 Material Properties

Use *Material Properties* to store information about the characteristics of the materials used in your experiment. Fields include:

- **Material Name:** Enter the name of the material being defined, for display purposes (e.g., "footing concrete").
- **Description:** Description of the material.
- **Select Material Type:** Use the pull-down menu to choose the basic type of material you are defining. Predefined choices include *Concrete*, *Rebar*, *Soil — Clay*, *Soil — Sand*, and*Steel*. Once you have chosen a basic material type, contextually appropriate fields will appear to allow you to enter specific data values. If *Other* is selected, no additional fields will appear; please upload files that describe your material.
- **Upload Files to Describe Material:** Upload files that further describe your material (e.g., stress-strain data from material testing). Click the *Browse...* button to choose a file to upload.



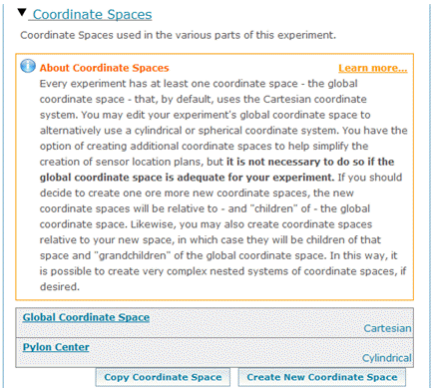
8.5.3 Coordinate Spaces

Every experiment has at least one coordinate space—the global coordinate space—that, by default, uses the Cartesian coordinate system. You may edit your experiment's global coordinate space to alternatively use a cylindrical or spherical coordinate system. One or more "child" coordinate spaces can be defined relative to the global coordinate space to help simplify the creation of sensor location plans.

- **Coordinate Space Name:** Enter a name for the coordinate space.
- **Description:** Describe the coordinate space being defined.
- **Timestamp:** Enter the date and time the coordinate space became valid. Use MM-DD-YYYY HH:MM format, with the hour component in terms of a 24-hour clock (military time).
- **Coordinate Space Parent:** Select the coordinate space within whose domain the coordinate space being defined is located.
- **Coordinate System Type:** Select the coordinate system used by the coordintate space being defined. Choices are *Cartesian*, *Cylindrical*, or *Spherical*.
- **Translation:** Enter the distances representing the amount of translation along the X, Y, and Z axes, respectively, required to describe the location of the origin of the coordinate space being defined with respect to the origin of the parent coordinate space. Regardless of the coordinate system (i.e., Cartesian, cylindrical, or spherical) used by the parent coordinate space, the distances entered here are assumed to describe a Cartesian coordinate.
- **Scaling:** Enter a scaling factor that describes the scale of the coordinate space being defined relative to the parent coordinate space. For example, if the parent coordinate space is measured in meters and the space being defined is measured in millimeters, the scaling factor is 0.001.
- **Rotation:** The three Euler angles (Φ, θ, and ψ) entered here describe the rotation of the coordinate space being defined with respect to the orientation of the parent coordinate space. The rotation is performed according to the "x-convention." Enter floating point values for Φ, θ, and ψ and indicate whether the angles

are in degrees or radians by selecting the appropriate option from the pull-down menu. The resulting matricies are automatically calculated as you enter values.

- **Coordinate Space Files:** Upload files that further describe the coordinate space. Click the*Add File* button to add a file, then click *Browse...* to select the file. Clicking the red "X" deletes the file.



Clicking the *Copy Coordinate Space* button allows you to copy a coordinate space from any of the experiment's sibling experiments (i.e., any experiment within the same parent project). This feature can be used to save time by allowing a coordinate space to be defined once and reused multiple times.

8.5.4 Sensor Location Plans

Sensor location plans allow you to label points in space relative to one of your coordinate spaces, and to associate different types of sensors (i.e., accelerometer, temperature, pressure transducer, etc.) with each point. Click the *Add Sensor Location* button to add a new sensor location to your sensor location plan. Clicking the red "X" next to a sensor location deletes that particular location from the plan. Clicking the *Cancel Changes* button causes any modifications made since the last time your plan was saved to be discarded; your plan will revert to the state it was in prior to editing. Save your sensor location plan by clicking the *Save Changes* button.

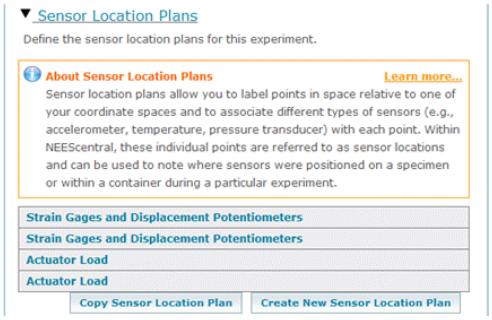
- **Plan Name:** Enter a name for the sensor location plan.
- **Type:** Choose the type of sensor used at the location being defined.
- **Label:** Enter a name (e.g., "A1" or "northwest corner") to reference the location being defined.
- **Location:**Enter the coordinates describing the sensor's location in terms of the coordinate system used by the coordinate space in which the location is being defined. For example, x1 represents x (Cartesian) or r (cylindrical and spherical). Similarly, x2 represents y (Cartesian) or θ (cylindrical and spherical), and x3 represents z (Cartesian and cylindrical) or Φ (spherical).
- **Orientation:** Enter a UNIT vector to describe the orientation of the sensor within the reference coordinate space.
- **Coordinate Space:** Select the reference coordinate space for the sensor location being defined.

To upload many sensor locations at one time, click the button labeled *Upload Sensor Locations*. The *Upload Sensor Location* button is only visible when editing an existing sensor location plan. You will be taken to a new page from where you can download an Excel spreadsheet by clicking on the *SensorLocation.xls* link. Once you've obtained the spreadsheet, fill it in according to the following rules, save it, and then upload it:

- **Label:** Enter a name to reference the location being defined.
- **SensorType:** Enter one of the following: Accelerometer, Conductivity Sensor, Depth Gage, Displacement Sensor, Inclinometer, Load Cell, Position Sensor, Pressure Sensor, Profile Sensor, Strain Gage, Temperature Sensor, Turbidity Sensor, Velocimeter, or Wave Gage.
- **Comment:** Enter any comments you have about this location.
- **X, Y, and Z:** These correspond to the sensor's location, described above.
- **I, J, and K:** These correspond to the sensor's UNIT vector, described above.

- **XUnit, YUnit, and ZUnit:** Enter the units associated with X, Y, and Z (IUnit, JUnit, and KUnit can be left blank). Choose from the following: cm, ft, in, km, m, µm, mi, mm, nm, yd, radians, or degrees.
- **Coordinate Space:** Enter the name of the reference coordinate space.

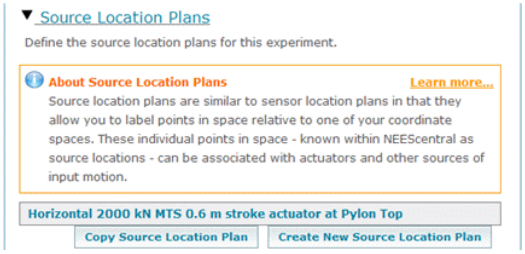
For detailed instructions, see Easy Upload of Sensor Information and Data Acquisition Channel Lists to NEEScentral.



Clicking the *Copy Sensor Location Plan* button allows you to copy a sensor location plan from any of the experiment's sibling experiments (i.e., any experiment within the same parent project). This feature can be used to save time by allowing a sensor location plan to be defined once and reused multiple times.

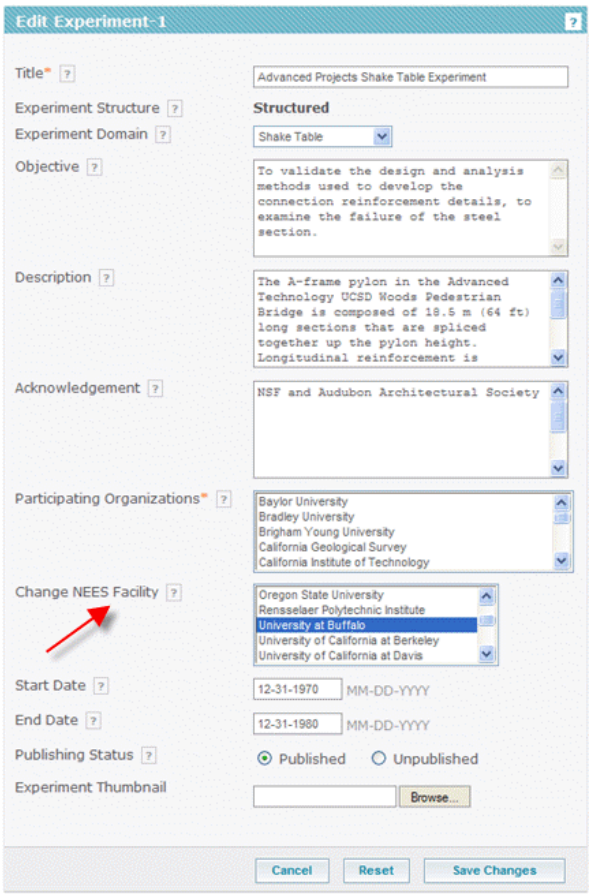
8.5.5 Source Location Plans

Source location plans operate in the same manner as sensor location plans, including the copy feature. Source location plans are used to describe the locations of actuators and other sources of input motion.

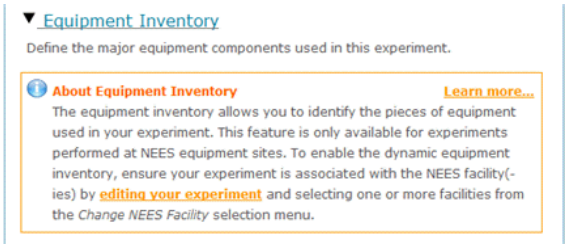


8.5.6 Equipment Inventory

The equipment inventory allows you to identify the pieces of equipment used in your experiment. This feature is only available for experiments performed at NEES equipment sites. To enable the dynamic equipment inventory, ensure your experiment is associated with the NEES facility (or facilities) where your experiment was performed. Do this by editing your experiment (see section 8.2) and selecting one or more facilities from the *Change NEES Facility* selection menu.

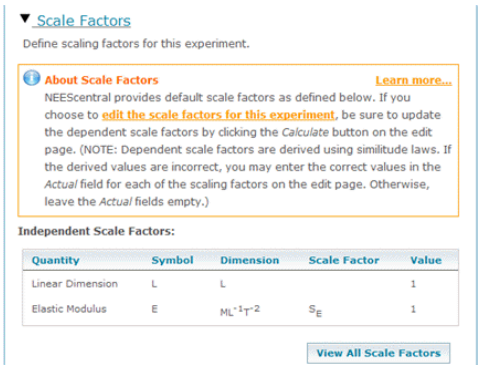


Edit your experiment's equipment inventory by clicking on the checkbox next to the pieces of equipment used in your experiment. You may enter comments about your use of the equipment in the *Comments* text field. Save your equipment inventory by scrolling to the bottom of the page and clicking the *Save Changes* button.



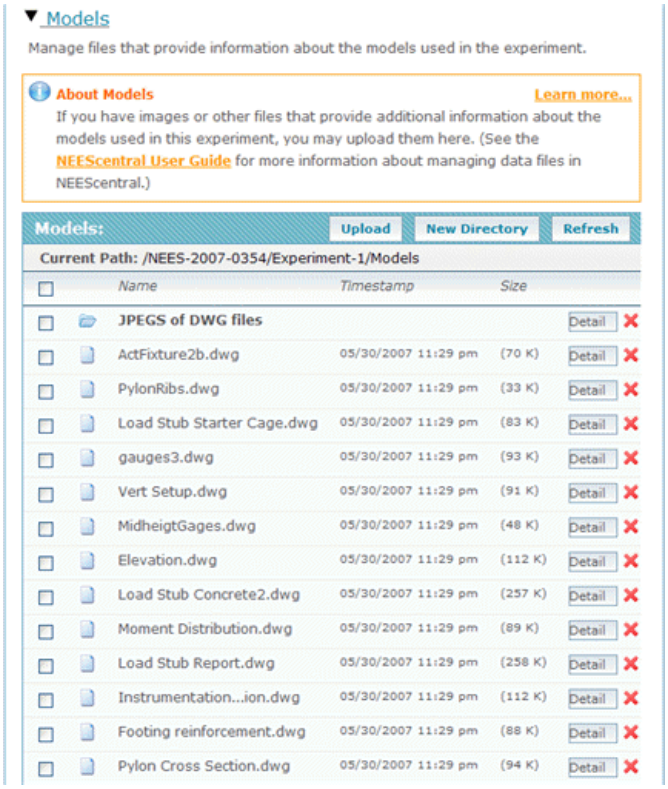
8.5.7 Scale Factors

Click the *Edit Scaling Factors* button at the bottom of the page, then enter values for any of the independent scale factors. Click the *Calculate* button to update the dependent scale factors, which are derived using similitude laws. If the actual scale factor differs from the derived scale factor, enter the actual factor in the appropriate text box in the *Actual* column and enter a comment in the associated *Comments* text box to explain the cause of the difference and what steps were taken to achieve similitude.



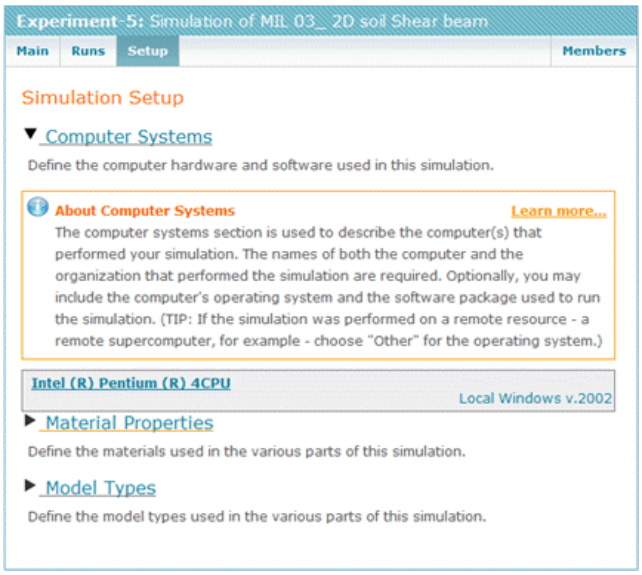
8.5.8 Models

Upload files that provide information about the models used in your experiment. See section 11 to learn how to manipulate files.



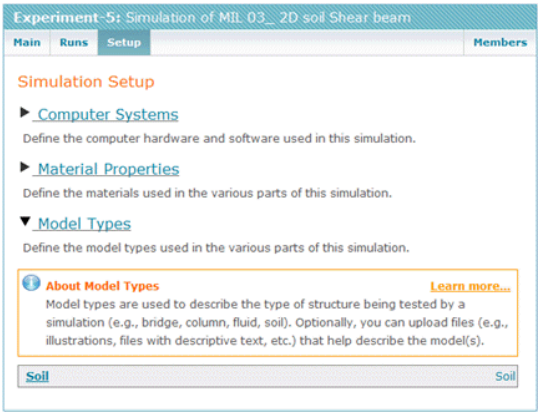
8.5.9 Computer Systems

The computer systems section is used to describe the computer(s) that performed your simulation. At a minimum, provide the name of the computer system used and the name of the organization that performed the simulation. You may optionally provide additional information, including information about the operating system and software package used. In the operating system menu, the term "local" means the computer is physically owned by the specified organization. For simulations performed on another resource that is not owned by the performing organization, such as a remote supercomputer, choose "other."



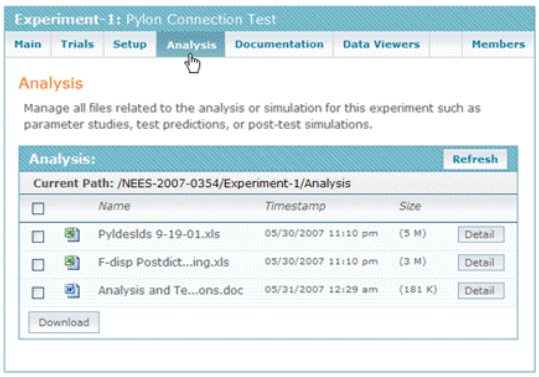
8.5.10 Model Types

Model types are used to describe the type of structure being tested by a simulation. Click *Create New Model* to add a model type to your simulation. Provide a name and description, select the model type, and upload any relevant files before clicking *Save Changes*.



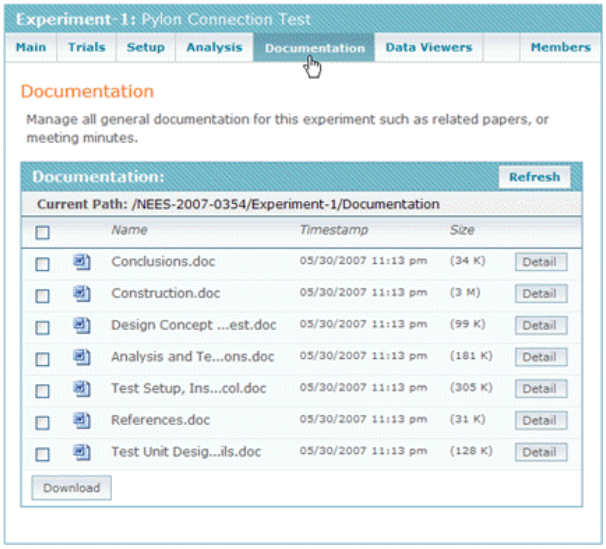
8.6 Analysis

All experiments require pre- and post-dictions, which should be placed in the experiment-level analysis folder. You may conduct data analyses at the trial level if more appropriate. Remember to add metadata to each file (see section 11.4).



*8.7 Documentat*ion

The experiment-level documentation folder is for general documents that are specific to that particular experiment and can include items such as drawings or documents describing overall design concepts or assumptions; lab construction, insturmentation, testing, and demolition schedules submitted to the equipment site for a particular experiment; loading histories proposed for the tests; and material properties for the tests. Some of these items may be more applicable to the trial-level, but when an experiment only has one trial they can be placed in the experiment-level folder. Remember to add metadata to each file (see section 11.4).



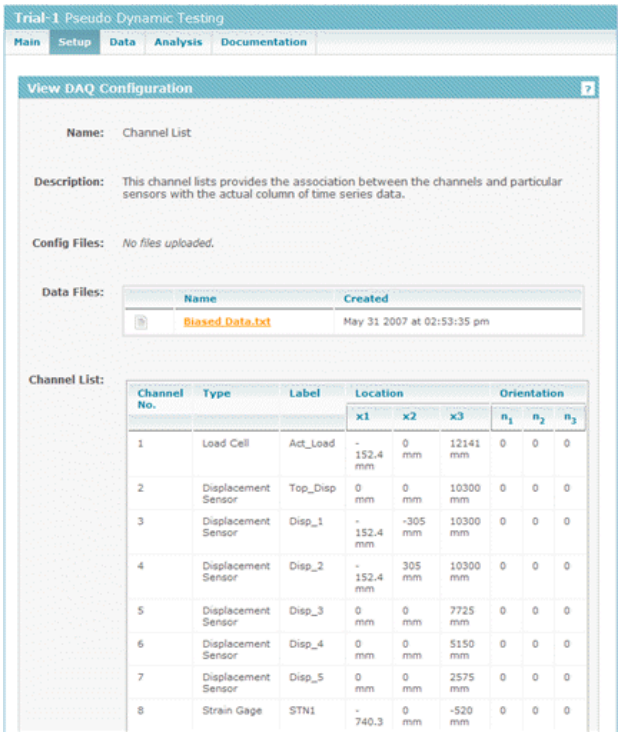
8.7 Exporting Data for Data Viewers

Experiment data can be exported from NEEScentral for use in N3DV, a UC Davis application for visualizing experimental data. This section of the NEEScentral User's Guide explains how to export data from NEEScentral for use with N3DV. More information about N3DV can be found here: N3DV Documentation.

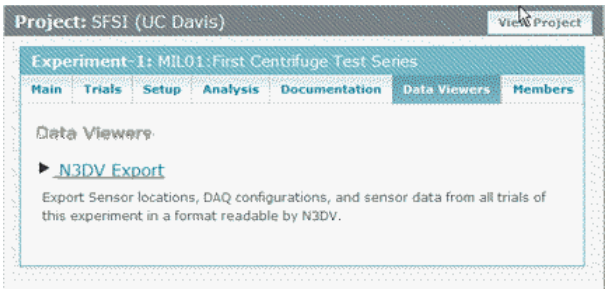
The N3DV setup section is unavailable for editing until you have created a DAQ configuration and uploaded an output data file to the DAQ configuration. To create a DAQ configuration you must first create a sensor location plan. See Section 8.5.4 to learn how to create a sensor location plan. See Section 9.4.2 to learn how to create a DAQ configuration.

Once you have created a DAQ configuration, upload a file containing time series data to the DAQ configuration's output file section. (The data in this file is expected to be cleaned, converted to engineering units, and generally ready for community use.) A time series data file is the same as an N3DV event data file/sensor log file. To upload a file, edit the DAQ configuration and click the button labeled *Add File* in the output file area near the top of the

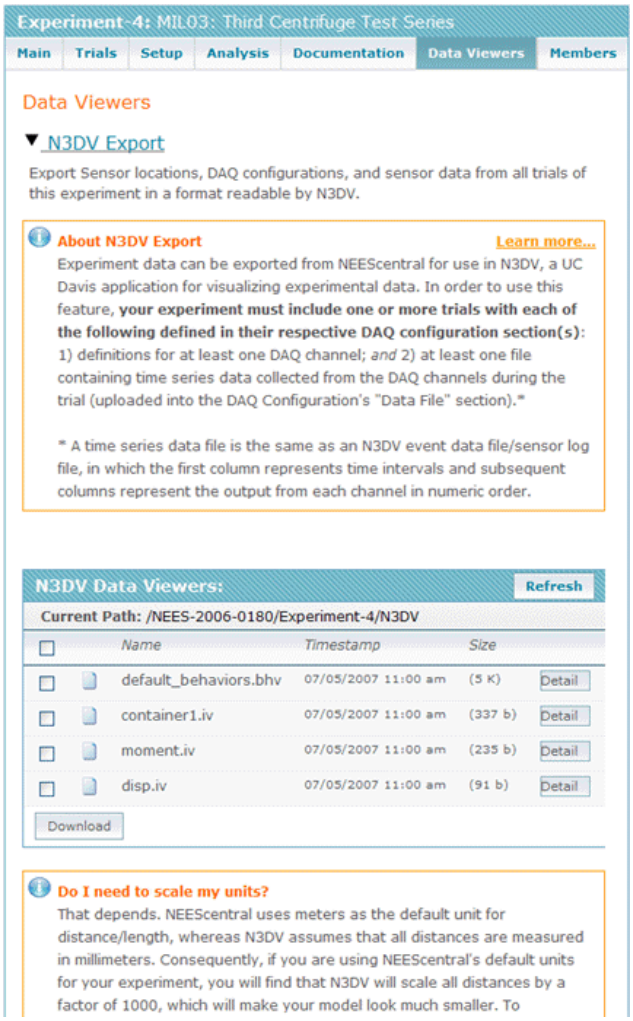
screen above the channel list. Locate and select the file you want to upload, then click the*Save Changes* button at the bottom of the screen.



Go to the experiment data viewers page by [returning to the appropriate experiment] and then clicking the *Data Viewers* tab in the experiment's navigation bar.



The N3DV setup section should now be available. Expanding the N3DV section will reveal two files: a default behavior file and a default custom geometry file. You may edit these files or upload your own; all files in this section will be exported for use with N3DV. Clicking the button labeled *Export N3DV Files* will save a ZIP archive to your local computer. Simply expand the archive and import the contents into N3DV.



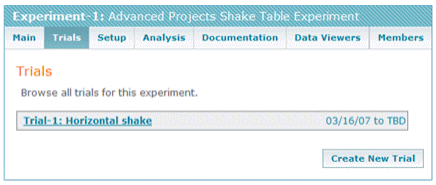
9. Trials, Runs, and Repetitions

Experiments can contain multiple trials where only minor changes to the configuration parameters defined at the experiment level occur. Minor changes may include modified loading protocol, removal or relocation of a small subset of instruments, or slightly different material properties. For some experiments, such as a single column tested psuedo-dynamically, only one trial should be created to store the collected data. For larger experiments like multiple shake-table tests using the same structure/specimen, separate trials should be created.
In some cases, a trial may be run multiple times without any changes to the setup or trial parameters and the data averaged in an attempt to improve data quality. In these cases, you should create a trial repetition. A trial repetition only allows you to store multiple data sets for different runs without changing any setup or confuguration information. If the configuration changes in any way, you must create a new trial. You cannot create repetitions of simulation runs.

The only difference between the terms "trial" and "run" is that trials are associated with experiments and runs are associated with simulations.

9.1 Creating a New Trial

To create a new trial, return to the list of all experiments (see section 6.2.2), click on the appropriate experiment, click on the *Trials* or *Run* tab, then click *Create New Trial*.

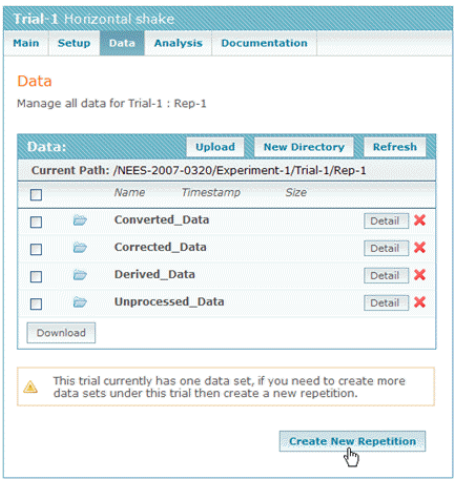


After providing some information about the trial, press the *Create Trial* button. Trial-level metadata fields include:

- **Title:** Enter a descriptive title that will aid in differentiating between trials.
- **Objective:** Provide a description of the trial's main objective.
- **Description:** Provide a description of the setup details and parameters involved with this trial.
- **Start time:** Enter the date and time that the trial began its execution.
- **End time:** Enter the date and time that the trial ended its execution.

9.2 Creating a Trial Repetition

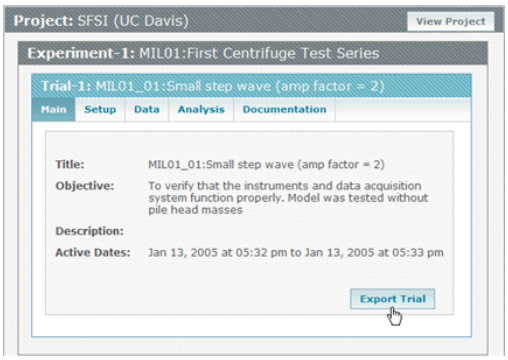
Once a trial has been established you can create repetitions of it to easily save data obtained by performing multiple repetitions using the same parameters. Within the trial you are repeating, click the *Data* tab, then click on the *Create New Repetition* button.



Enter the trial's start and end date and time, then press the *Create Repetition* button.

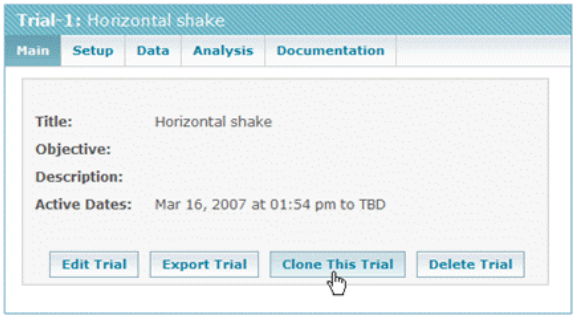
9.2.1 Export Trial Information

Download all of a trial's meta-data and associated files into one easy-to-manage zip file by simply clicking the *Export Trial* button.



9.3 Cloning a Trial or Run

Cloning a trial is simply a shortcut for creating a new trial with the same metadata as the trial being cloned, but with no data associated. It is most useful in situations when you need a new trial but only need to modify the metadata slightly (if at all) from an old trial. Within the trial you want to clone, click the *Main* tab, then click *Clone This Trial*.



You must enter a title for the trial you are creating. You may also enter an objective, description, start date and time, and end date and time as described in section 9.1.

9.4 Trial Setup

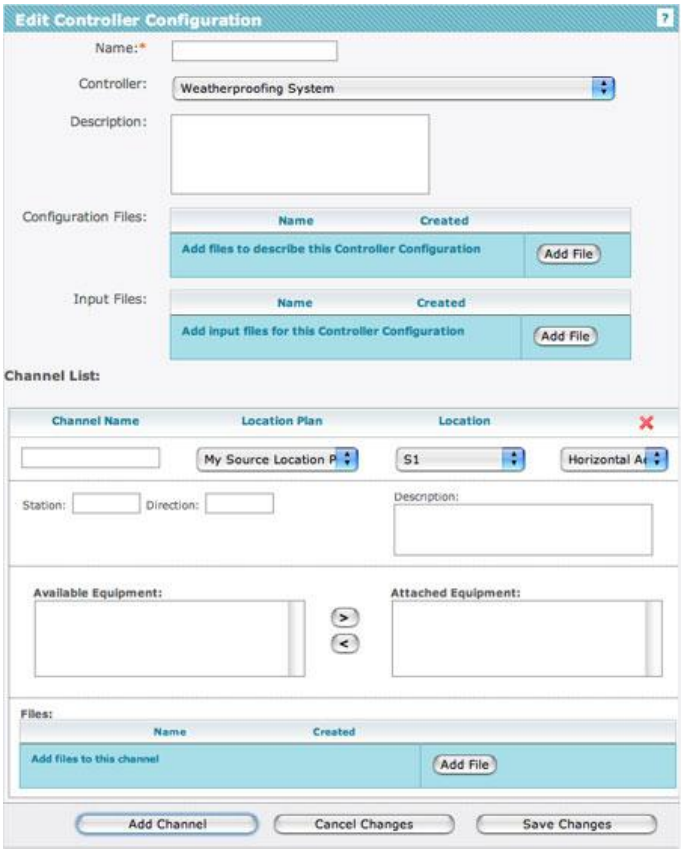
Trial setup is similar to experiment or simulation setup. Runs do not have a setup section. Click on a trial's *Setup* tab and expand the section in which you are interested to see any existing information. Click the appropriate *Edit* button to edit either the source controller configuration or the DAQ channel list.

9.4.1 Source Controller Configurations

The source controller configuration setup allows you to associate a channel number or name with each of the locations defined in your source location plan(s), and indicate other details about each source.
To create a source controller configuration, expand the section labeled *Source Controller Configurations* on the trial *Setup* tab, then click the button labeled *Add Controller Configuration*. Give your configuration a name, enter a description of the system, and upload system configuration and output files.

To add source controller channels to the configuration, click the *Add Channel* button to add a new channel to your channel list. Clicking on a red "X" deletes that channel from your channel list. Click *Cancel Changes* to discard all modifications you have made to the channel list since the last time it was saved. Clicking *Save Changes* saves the current state of your channel list.

- **Channel Name:** Indicate the channel name or number associated with the source.
- **Location Plan:** Choose the source location plan in which your source's location is defined.
- **Location:** Choose the name that references the source's location.
- **Sensor:** Assign a particular source to the chosen location.
- **Station:** Location of the recording equipment (e.g., 90053 Canoga Park – Topanga Canyon) if you are using a real record. This field may not be applicable if you are using your own generated input motion that isn't a real record.
- **Direction:** Direction of motion (e.g., horizontal, vertical, or transverse).
- **Description:** Enter a short description of the channel's input, output, and purpose.
- **Available Equipment:** This field is currently not used.
- **Attached Equipment:** This field is currently not used.



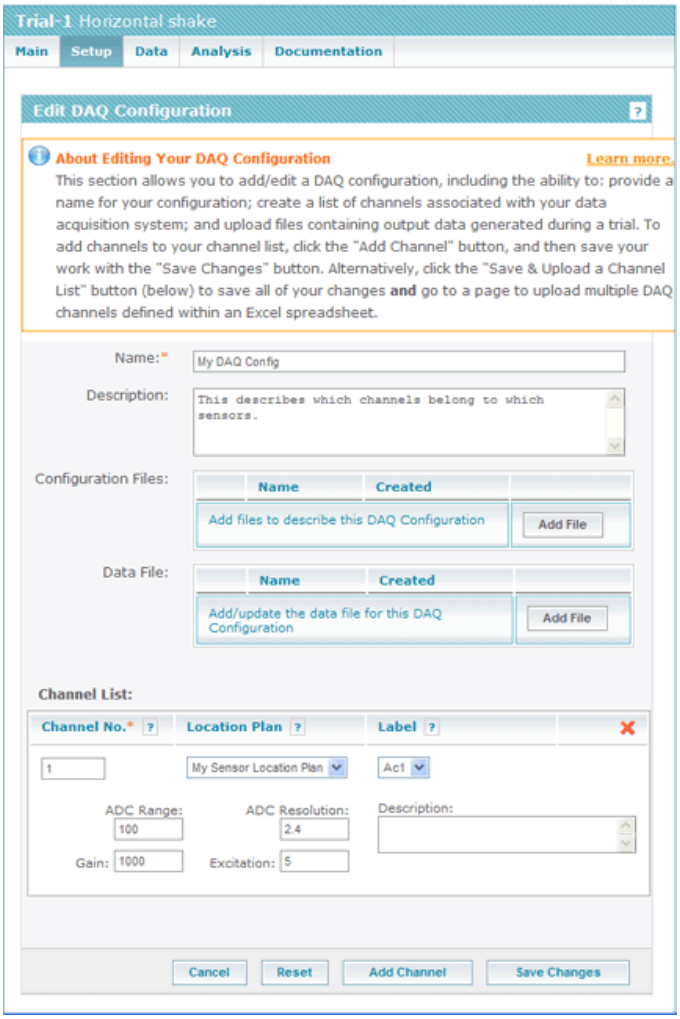
9.4.2 DAQ Configurations

The DAQ configuration setup allows you to associate DAQ channels with locations defined in your sensor location plan(s), as well as indicate details about the sensor placed at that location.
To create a DAQ configuration, expand the section labeled *DAQ Configurations* on the trial*Setup* tab, then click the button labeled *Add DAQ Configuration*. Give your configuration a name, enter a description of the system, and upload system configuration and output files.

To add DAQ channels to the configuration, click the *Add Channel* button to add a new channel to your channel list. Clicking on a red "X" deletes that channel from your channel list. Click *Cancel Changes* to discard all modifications you have made to the channel list since the last time it was saved. Clicking *Save Changes* saves the current state of your channel list.

- **Channel Number:** Indicate which column of data in the output file is associated with this sensor. The value must be a positive integer. Do not repeat values.
- **Location Plan:** Choose the sensor location plan in which your sensor's location is defined.
- **Label:** Choose the name that references the sensor's location.
- **ADC Range:** Enter the range of the ADC (analog-to-digital-converter) as a single number. For example, if the minimum value is -50 and the maximum value is 50, enter the range as 100.
- **ADC Resolution:** Enter the ADC's resolution.
- **Gain:** Indicate the sensor's gain (i.e., a multiplier that converts the sensor's actual output, such as millivolts, to the recorded output, such as volts).
- **Excitation:** Enter the amount of excitation. (Many sensors require excitation currents or voltages, in order to produce an electrical output.)
- **Description:** Enter a short description of the channel's input, output, and purpose.

(For more information on ADC's, one on-line source is Wikipedia.)



To upload many DAQ channels at once, click the button labeled *Upload a DAQ Channel List*. The *Upload a DAQ Channel List* button is only visible when editing an existing DAQ configuration. You will be taken to a new page from where you can download an Excel spreadsheet by clicking on the *DAQChannelList.xls* link. Fill out the spreadsheet according to the following instructions, save it, and then upload it to import your channel list:

- **ChannelOrder:** Indicate which column of data in the output file is associated with this sensor. The value must be a positive integer. Do not repeat values.
- **SensorLocationPlan:** Enter the name of the sensor location plan in which your sensor's location is defined.
- **SensorLocation:** Enter the name that references the sensor's location, as previously defined in a sensor location plan.
- **Gain:** Enter the amount of gain associated with the channel.
- **ADCRange:** Enter the ADC range.
- **ADCResolution:** Enter the ADC resolution.
- **Excitation:** Enter the amount of excitation.
- **Description:** Enter a description for this channel.

For detailed instructions, see Easy Upload of Sensor Information and Data Acquisition Channel Lists to NEEScentral.

9.5 Analysis

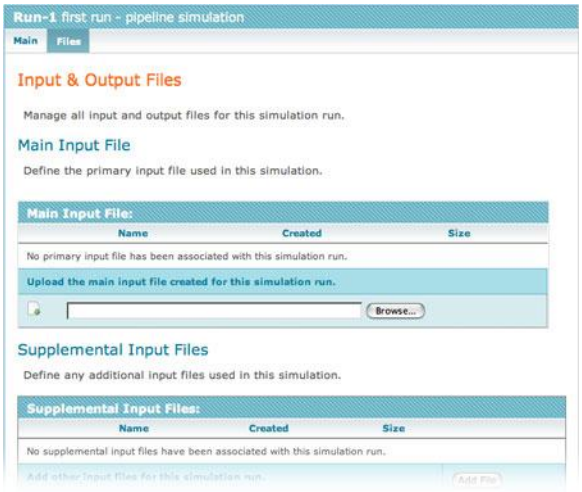
Pre- and post-dictions are required at the experiment-level, but analyses may be conducted at either the experiment- or the trial-level. The trial-level analysis folder is provided for those researchers who want to upload information at the trial-level.

9.6 Documentation

Trial-level documentation includes specific documents about a trial that differentiates it from all other trials. Any documentation relevant to all of the trials should be in the experiment-level documentation folder, or even the project-level documentation folder if the information is related to all experiments.

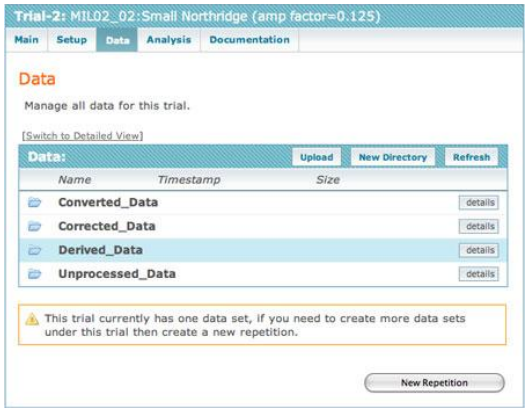
9.6 Files

Instead of *Analysis* and *Documentation* folders, simulations make use of a single *Files*folder. This folder should be used to upload all input and output files used and created by the simulation run.



10. Data

Within a trial, upload your data into the appropriate data folder.



10.1 Unprocessed Data

This folder is for the lowest, most basic form of data coming from the DAQ sensor. Usually this is in volts or some other non-meaningful unit, but some equipment sites have sensors that automatically convert data into engineering units. Data in engineering units are still expected to be in the *Unprocessed Data* folder because they are the most basic form of data available. In cases where the DAQ sensor performs automatic conversions you are encouraged to provide a document that identifies which data are in engineering units and what conversions/manipulations were performed. Data in the three other data folders should be traceable back to data in the *Unprocessed Data* folder; unprocessed data is the parent of all other data. Specifically, researchers should begin with unprocessed data when using data from other researchers.

Upload all data files from load cells, displacement transducers, strain gauges, and other instrumentation without modification. By sharing unprocessed data, a researcher in the future can try to replicate your test or apply different assumptions to your data. Proprietary data formats should be avoided as much as possible. If proprietary data is uploaded, an exportable non-proprietary version of the same data should also be uploaded.
If the names of your data files include sufficient metadata about the information they contain, such as sensor location and nomenclature, you may wish to upload your data in bulk as a folder, then assign folder-level metadata. Otherwise, be sure to add metadata to each file to aid other researchers (see section 11.4).

10.2 Converted Data

This folder is for data that has been converted to more useful units. These are simple conversions, such as changing voltages to strain, curavture, displacement, etc. You should also upload documents describing the assumptions made when converting your unprocessed data to this folder. In cases where the DAQ sensor automatically converted its output to engineering units, you may decide whether you want to upload the data to both the*Unprocessed Data* folder and the *Converted Data* folder, or if you'd rather just provide a document stating that these data sets are in the *Unprocessed Data* folder.

10.3 Corrected Data

During shake-table testing, or when problems occur during testing, data must be cleaned or revised to compensate for calibration problems, to eliminate noise, or to apply an overall correction factor. This folder should contain any corrected data as well as documents describing all modifications, assumptions, versioning information, etc.

10.4 Derived Data

This folder is for data generated by using information from the *Converted Data* folder to plot, compare, or analyze results. Any comparisons between simulation predictions and the experimental data should also go in this folder. Examples of derived data include plots of strain or displacement profiles along a specimen axis showing distribution along the length of a member; plots of rotation from comparing two displacement transducers; shear profiles derived from accelerometer or other instrumental data; plots of hystereses like force vs. displacement or stress vs. strain; and derived FFTs. This folder may also contain files indicating the peak or critical data scans used for the data manipulations. You should include as many documents as needed to fully describe what assumptions were made to get the derived data.

Creating subdirectories within this folder will help differentiate between types of derived data. For example, you could create a folder for data related to curvature and another for data related to rotation.

11. File Operations

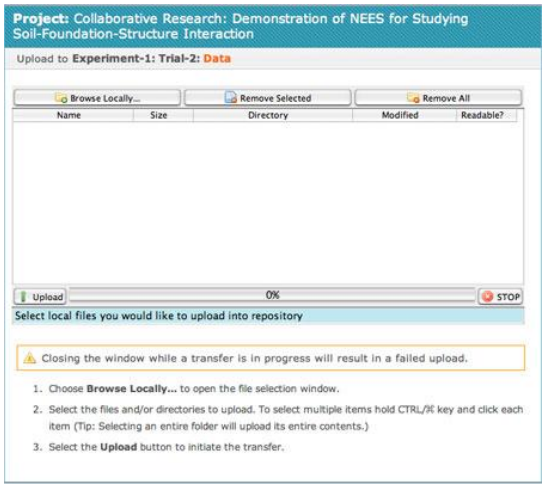
For all file operations, you must first select the area in which you'd like to work by clicking on*Experiments* (experimental projects only), *Analysis*, *Documentation*, or *Public* from the project's subnavigation bar.

11.1Creating New Folders

You can create new folders within the predefined NEEScentral folders to help keep your data and documentation organized. To create a new folder, click the *New Directory* button. Enter the desired folder name and click *Make Directory* to create the folder. Do not use special characters such as '&', '$', '%', or ':' in your folder names.

11.2Uploading Files

To upload a file, click the *Upload* button. A new NEEScentral upload window will pop up.



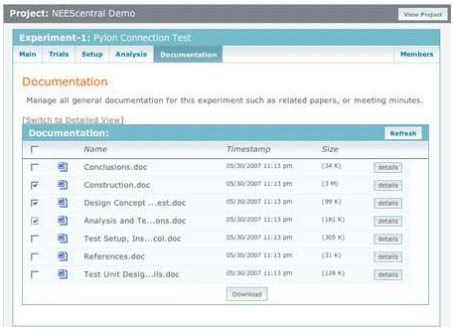
To designate files to save into the data repository, click the *Browse Locally...* button. A dialog box will appear and allow you to choose individual files or entire folders from your computer. If you make a mistake, select the items you wish to remove from the list in the upload window (hold CTRL on a PC, or ⌘ on a Mac to select multiple files) and click *Remove Selected*. Alternatively, pressing *Remove All* will clear all files from the queue. Once you've added the desired files to the list in the upload window, click the *Upload* button. You must leave the upload window open while files are being transferred. Closing the window before the transfer is complete will result in lost or damaged data.

Do not use special characters such as '&', '$', '%', or ':' in your file names. Attempting to upload files with special characters in their names may result in an error.
Once your files have been uploaded, you may add metadata (details about the file) to each individual file to enhance searchability. Metadata can be added at the folder level as well. See section 11.4 to learn how to add metadata.

11.3Downloading Files

To download a single file, simply click the filename.

To download multiple files or folders, click the checkboxes next to the files or folders you wish to download (or the checkbox at the top to select all files) and click the *Download* button. (Click the *Trust* button to accept our applet certificate.)



This will launch a new window where you will specify the location on your computer where the files will be saved. If you check the box marked "Retain Folders and File Structure" the downloaded files will appear in a folder hierarchy matching that of your project. If you uncheck this box the files will be saved just as they appeared in the file list on NEEScentral.

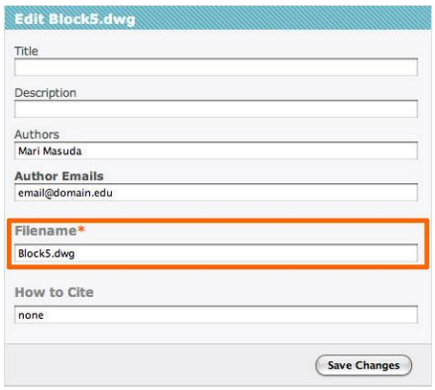
11.4Viewing and Editing Metadata

A document's metadata can be viewed by clicking the associated *Details* button.

To add new or change existing metadata, click the *Edit* button, enter the new information, and press *Save*.

11.5Renaming Files

To rename a file, click the *Details* button, then click *Edit*. Enter the new filename in the box labeled *Filename*, and press *Save*. Do not use special characters such as '&', '$', '%', or ':' in your file names.



11.6 Moving or Copying Files

You may move or copy files within a project by clicking on a file or folder's associated *Details*button, then clicking *Move*.

Use the *Browse* button to locate the destination directory, then click *Select*. Once the destination has been identified, click *Move* to change the location of the file or folder, or click*Copy* to save a duplicate of the selected data to the new location. Moving data preserves the associated metadata, but copying does not.

11.6Deleting Files

You may delete files or folders by clicking on a file or folder's associated *Details* button, then clicking *Delete*. Files can also be deleted by clicking on the red "X" next to the *Details* button.


Models:
Upload
New Directory
Refresh
Name
Timestamp
Size
Pile3.dwg
Jun 15, 2006 at 08:57 pm
(37 K)
details
Bent1.dwg
Jun 15, 2006 at 09:02 pm
(79 K)
details
Deck.dwg
Jun 15, 2006 at 09:02 pm
(56 K)
details
Bent2.dwg
Jun 15, 2006 at 09:02 pm
(86 K)
details
Block5.dwg
Jun 15, 2006 at 09:02 pm
(62 K)
details
Pile1.dwg
Jun 15, 2006 at 09:02 pm
(37 K)
details
Block1.dwg
Jun 15, 2006 at 09:02 pm
(115 K)
details