



# **MAST Laboratory Site Access and Policy**

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The MAST Computer Infrastructure is jointly developed by the Department of Civil Engineering, the Department of Computer Science & Engineering, and the Department of Electrical and Computer Engineering.

This publication is also available electronically in PDF format at the MAST Laboratory Web site:

<http://nees.umn.edu/training/POLICY.pdf>

Other MAST manuals are available at this site, including:

- MAST Laboratory Safety Plan  
<http://nees.umn.edu/training/Splan.pdf>
- Safety Training Memorandum  
<http://nees.umn.edu/training/Smemo.pdf>
- DAQ User Guide  
<http://nees.umn.edu/training/DAQ.pdf>
- HCC User Guide  
<http://nees.umn.edu/training/HCC.pdf>
- Telepresence User Guide  
<http://nees.umn.edu/training/TELE.pdf>
- MAST Researcher's Resource Guide  
<http://nees.umn.edu/training/RES.pdf>

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## **Introduction**

This Site Access Plan requires NEES Consortium review and approval. In addition, the University of Minnesota will review and update the plan on a yearly basis.

The MAST Laboratory contains unique, expensive equipment that, for safety reasons, requires that the operation of some of the systems be limited to a few trained individuals. Because the MAST Laboratory is funded with NSF/NEES dollars to be a resource available to researchers from around the country, the MAST Laboratory policies have been developed to balance concerns for lab safety, equipment safety, and accessibility for outside researchers.

## **Importance of the project work plan**

The key element to safe and efficient use of the MAST lab is the project work plan. A detailed work plan will need to be prepared by NEES researchers and approved by the Operations Manager prior to any project-related work occurring in the MAST Laboratory. The work plan will be incorporated into the contractual agreement between the NEES researcher and the University of Minnesota for the research project and will be the governing document to control the project as it moves through the facility.

### **Work plan contents**

The work plan will contain detailed information concerning the individual work tasks to be performed, the duration of the tasks, the order in which the tasks are performed, identification of who will perform the tasks, and the resources required to perform the tasks.

The work plan shall include:

- a list of tasks to be performed
- specimen drawings
- calculations
- schedule
- list of equipment, materials, supplies, and tools needed for the work tasks
- list of personnel to carry out the work tasks
- an instrumentation plan
- a rigging plan
- space requirements

### **Work plan updates**

Once activity begins in the MAST Laboratory, the NEES researcher must update the work plan weekly and submit any changes for review and approval by the Operations Manager.

## **MAST Safety Plan**

The MAST Laboratory Safety Plan will be provided to NEES researchers once their project has been scheduled for the MAST Laboratory. It is accessible from the MAST website.

## **Failure to adhere to policies**

Failure to follow policies regarding safety or work plans will result in the following consequences.

- First offense – the Operations Manager reviews the situation with the involved individual and/or team.
- Second offense – the Operations Manager makes a verbal or written report to the Principal Investigator.
- Third offense – the Operations Manager sends written notification of violation(s) to the Principal Investigator, to the University Department of Civil Engineering, and, if a NEES project, to the NEES Consortium.

## **Contact information**

### **MAST Laboratory personnel**

University of Minnesota personnel associated with the 10-year operation and maintenance of the MAST Laboratory are:

- Principal Investigator:  
Carol Shield (612) 625-5835 ckshield@umn.edu
- Operations Manager:  
Paul Bergson (612) 626-9561 bergs013@umn.edu
- System Administrator:  
Drew Daugherty (612) 626-9562 daugh009@umn.edu

### **Laboratory mailing address**

The mailing address for the MAST Laboratory is:

MAST Laboratory  
Department of Civil Engineering  
University of Minnesota  
2525 4<sup>th</sup> Street SE  
Minneapolis, MN 55455

### **Laboratory telephone and FAX numbers**

The general phone number is (612) 625-0614.  
The fax number is (612) 624-5964.

### **Web page URL**

The MAST Laboratory Web page is located at <http://nees.umn.edu>.

## **University of Minnesota business hours and calendar**

Project schedules for the MAST Lab shall be based on a conventional 5-day work week with office/lab hours between 8 a.m. and 5 p.m. Work shall not be conducted in the MAST Laboratory after hours or during official University of Minnesota holidays without prior approval of the Operations Manager. Official University of Minnesota holidays can be found at <http://www.umn.edu>.

## **Project schedule and agreements**

Efficient use of the MAST Laboratory will provide the largest research return on the investment. To ensure that projects move through the laboratory in a timely manner, researchers will need to provide a comprehensive work plan, including a detailed schedule. To ensure that both the University of Minnesota and outside agencies are protected, formal agreements will be required.

The details of the work plan for these agreements will be included as an exhibit to the formal agreement and will be drafted by the Operations Manager after approval of the work plan and will contain the detailed project schedule and assignment of resources identified in the work plan. The agreements will contain other appropriate contractual terms and will be signed by authorized representatives of the University of Minnesota and of the NEES researcher's institution.

The MAST Laboratory is a shared use facility. This means that the MAST Laboratory will be used for both NEES research and for other research/testing activities secured by the University of Minnesota. The target NEES use of the lab is 50 percent.

### **Additional agreements**

Depending on the project, subcontractors may be needed to perform portions of the work associated with a project. Contractors whose services are secured directly by the NEES researcher will be subject to the access limitations placed on the NEES researcher by the agreement between the researcher and the University of Minnesota. Details concerning the oversight of subcontractors will be contained in the agreement between the University of Minnesota and the NEES researcher. The University of Minnesota reserves the right to approve contractors.

The work plan will also identify by name specific individuals who will be working in the MAST Lab, what role they will be performing, and the anticipated duration of their activities. Individuals not identified in the agreement will need to be approved by the Operations Manager before they can work in the lab

## Conditions of access

### Access prior to an approved MAST work plan

Space within the MAST Lab is limited. NEES researchers shall not order equipment/supplies/etc. for delivery to the MAST Lab prior to receiving approval of their work plan. Scheduled visits to the MAST Laboratory prior to the approval of work plans are welcome.

### Access after a MAST work plan schedule is approved

NEES researchers will be given physical access to the MAST Laboratory for the period of time defined in the approved work plan schedule. Access to the MAST Laboratory during the project period will be gained through use of card keys that will be issued to the visiting NEES researchers.

As shown in Figure 1, the physical access to the MAST Laboratory includes the following areas (rooms); the staging area, the MAST test bay (i.e., the space within the reaction floor and walls), the control room, the office area, the conference room, the restrooms, and the entry vestibule. The pump room, storage room, mechanical room, electrical room, the crane catwalk, and the space behind the reaction walls are not accessible to NEES researchers.

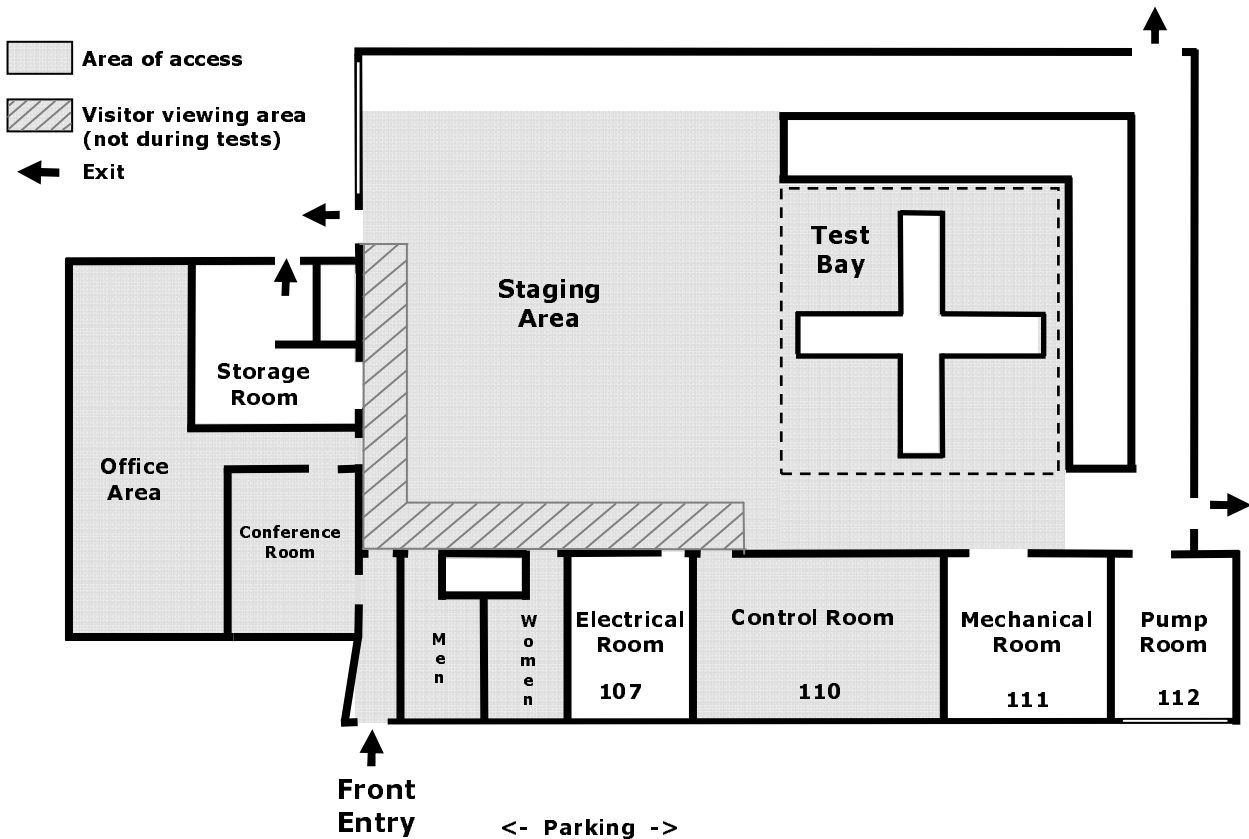


Figure 1. Areas for visitor viewing and MAST researcher access

NEES researchers and their personnel need to perform their work in accordance with the approved schedule in their work plan. Deviations from the schedule must receive prior approval from the Operations Manager who may at his discretion discuss the matter with the NEES Consortium. Schedule slippages may require pulling the project from the facility due to schedule conflicts with other projects.

NEES researchers will be provided one cubicle in the office area per MAST project. Visiting NEES researchers may request additional office space from the Operations Manager. The Operations Manager will consider requests for additional office space, however, availability is contingent on the number of concurrent MAST projects at the time of the request, as well as on the number of researchers with access to the MAST Laboratory during that period of time. The authority for final approval of such a request rests with the Operations Manager.

Cubicles in the office area include office furniture (desk, chair and storage cabinets) and a communications port for the MAST Laboratory Local Area Network with access to the Internet. The MAST Laboratory will not provide computing equipment to visiting NEES researchers. Nor can digital imaging equipment, other than the video and digital cameras in the MAST test bay and described elsewhere in this document, be made available to visiting NEES researchers. Several shared phones are also available in the office area. Long distance phone service will be available at a charge.

### **Access to tools**

The MAST Laboratory has tools (hand tools, power tools, air tools, welding tools) that are available to NEES researchers who have paid the user fee. The recharge rates are identified in the master agreement between the University of Minnesota and the NEES researcher. Recharge rates are updated annually. Current recharge rates can be found on the MAST website.

Power tools can be checked out of the Storage Room on a daily basis, while the hand tools will be available in a kit that can be checked out for the duration of a MAST project. NEES researchers will be responsible for returning all tools to the Storage Room in operable condition. The NEES project will be responsible for replacing any lost hand tools.

The electric welder and/or cutting torch may be used by qualified professionals who are hired on a subcontract basis to either fabricate or demolish test specimens. In such cases, prior approval from the Operations Manager must be obtained. The subcontractor wishing to use this equipment will be required to verify professional qualifications and prior experience.

### **Access to instrumentation**

Instrumentation purchased through NEES is available for use by NEES researchers. A complete list of NEES instrumentation is identified on the MAST web page. Additional instrumentation may be available for a fee.

For safety reasons, only MAST staff are allowed to operate much of the MAST Laboratory equipment. Examples of this equipment include: hydraulic equipment (e.g., pump, manifolds, controllers, actuators and hoses), forklift, scissors lift, electric arc welder, oxygen-acetylene cutting torch, and all computing equipment (except as

outlined in the Access to IT Section), cameras (except as outlined below), robotic arms, lighting attached to robotic arms, and associated cabling (except as outlined below). This policy will be enforced strictly. The only exceptions are use of the electric welder and/or cutting torch (as described in the *Access to tools* section), and data sensors and lighting not attached to robotic arms.

NEES and non-NEES data sensors (e.g., linear variable differential transformers, string pots, and other reusable sensors not purchased with project funds), lighting equipment (other than lighting to be attached to robotic arms), and associated cabling may be checked out of the Storage Room for the period of time identified in the work plan schedule. Where needed, calibration of this equipment must be done by the NEES researchers. MAST staff will remove and return all reusable NEES and non-NEES instrumentation, lighting, and associated cabling.

Video and still image cameras and associated equipment, including robotic arms are to be installed only by MAST Laboratory personnel. MAST staff will also remove and return all cameras and associated equipment. However, video or still image cameras can be checked out of the Storage Room on a daily basis during operating hours for short-term use.

### **Access to the MAST Test Bay**

Attachment of a test specimen to the crosshead or ancillary actuators must be performed under the direct supervision of the Operations Manager.

### **Access to the MAST Six Degree-of-Freedom Controller**

For safety reasons, only MAST staff will be allowed to operate the MAST controller. NEES researchers will have access to the MAST control server (HCC Controller) that interfaces to the MAST controller.

### **Access to IT**

The MAST Laboratory is outfitted with a variety of data acquisition, archiving, and telepresence equipment, including sensors (e.g., load cells, transducers, and cameras), servers, appliances, and cabling. Access to all computers is restricted to MAST Laboratory personnel with the exception of the data acquisition servers, client machines, MAST Laboratory Local Data Repository, and video-teleconferencing equipment. Accounts on the data acquisition servers, client machines, and the MAST Laboratory Local Data Repository will be given to NEES researchers by the System Administrator on an as-needed basis after training on the equipment is completed.

Personal computers will not be provided by the MAST Laboratory to NEES researchers.

The MAST Laboratory is linked to computational facilities associated with the NEESgrid. Use of those facilities is administered by the NEES Consortium, Inc.

The MAST Laboratory is connected to the NEES Data Repository. Access to the NEES Data Repository, including curation services, is administered by the NEES Consortium, Inc. MAST Laboratory staff will facilitate access to the NEES Data Repository as needed.

All results and metadata for experiments and simulations conducted within the MAST Laboratory will be stored on the MAST Laboratory Local Data Repository for a minimum of three months and a maximum of six months after the termination date of the MAST research agreement for the pertinent project. Storage requests for a longer period of time must receive approval from the Operations Manager. The MAST Laboratory staff will facilitate access to the MAST Laboratory Local Data Repository. However, MAST Laboratory staff will not provide curation or data reduction services for a project.

## **Identification of restricted equipment**

The use of the overhead cranes, the forklift, scissors lift, hydraulic systems, hydraulic power supply, and six degree of freedom controller is limited to University of Minnesota MAST personnel.

## **Liability issues**

Terms governing liability will be included in the formal agreements. Generally, each institution will be expected to be responsible for its own actions and the results thereof and for the actions of its employees. Each institution will be responsible for providing worker's compensation and other insurance coverage for its employees and to pay for any damages caused by it or its employees. As a State institution, under Minnesota law the liability of the University of Minnesota is limited to the amount of its insurance coverage: generally, \$1 million per claim and \$3 million per occurrence. Any claims against the University of Minnesota can be brought only in Minnesota State Court.

## **Recharge rates and user fee policies**

The majority of operation and maintenance costs are anticipated to be covered by the NEES Operation and Maintenance contract between NEES and the University of Minnesota.

This agreement only covers the operation and maintenance of equipment purchased under the MAST NEES Award. A \$1500 a month recharge rate is applied to all Laboratory users to pay for the maintenance of the forklift, scissors lift, hand tools, and so forth.