



UNC CHARLOTTE

Department of Engineering Technology

LABORATORY SAFETY ANALYSIS

CONDUCTING SOIL DIRECT SHEAR

Location: Smith 131

Required Training: Soil direct shear test equipment are designed and intended for use by properly trained and experienced operators. If you are not familiar with the proper and safe operation of this type of apparatus, do not use until proper training and knowledge have been obtained.

Required Personal

Protective Equipment (PPE): Safety glasses, closed toed shoes

Reference Materials: Manufacturer’s safety rules and operating instructions

PHOTOS	TASK	HAZARDS	CONTROLS
	Wear clear safety glasses with side shields.	Flying debris	<ul style="list-style-type: none"> Students are required to provide their own safety glasses. See laboratory instructor or laboratory manager if you do not have safety glasses before proceeding to use equipment.
	Inspect safety glasses for cracks, scratches or other damage. Ensure the ANSI standard Z87.1 is stamped into the side of glasses. If necessary inspect dust mask or face mask.	Flying debris and dust particles	<ul style="list-style-type: none"> If defects are found report this to your laboratory instructor before using.
	Put on PPE	Flying debris and heavy objects	<ul style="list-style-type: none"> Always wear safety glasses. Always wear closed toed shoes when handling jaws or other heavy attachments.
	Visually inspect the electrical power cord.	Electrical shock	<ul style="list-style-type: none"> If the electrical cord is damaged or worn the electrical cord should be unplugged and tagged “Out of Service-Do Not Use”. This should be reported to the laboratory manager immediately. Electrical cord replacement should only be conducted by a factory authorized technician.
	Check manual controls	Injury, pinch points	<ul style="list-style-type: none"> Check for proper functioning of manual controls used to position crosshead. Always keep hands/fingers away from jaws or platens when adjusting crosshead

	Inspect work area, walk around Instron looking for debris and ensure proper lighting.	Slips, trips & falls	<ul style="list-style-type: none"> Keep the work area around the soil compression tester free from scraps, dust, oil and grease. Make sure the direct shear device is located on a level surface, with plenty of clearance for proper operation
	Prepare specimen for testing	Injury, pinch points	<ul style="list-style-type: none"> Always wear PPE when working with sample materials.
	Insert sample specimen	Injury, pinch points	<ul style="list-style-type: none"> Use care in placing test specimen in test fixture. Keep fingers away from any pinch points when positioning test specimen and fixture in to the load frame. Ensure good contact between loading platens and test fixture before beginning test. Keep fingers from being in between specimen and platen
	Run test by turning the switch to the "ON" position.	Lift injury	<ul style="list-style-type: none"> Always wear safety glasses throughout the test. Use care when applying load increments to load frame. Use the proper lifting techniques, ask for assistance or obtain a mechanical lifting device for applying load increments to load frame. Never leave the direct shear machine unattended while in motion
	Turn off the direct shear device by switching the button to "OFF" position, Remove specimen	Cuts, pinch points	<ul style="list-style-type: none"> Use care when removing load increments from load frame. Do not attempt to remove test specimen until all load is removed from the load frame. Keep fingers away from any pinch points when removing test specimen and fixture from the load frame. Always turn the power off and unplug when testing is complete
	Clean work area and return all PPE to clean, dry storage area.	Injury	<ul style="list-style-type: none"> To ensure adequate housekeeping measures to prevent accidents.

For more information about this LSA, contact the *Department of Engineering Technology* at UNC Charlotte (704) 687-2305

Please visit our website at: <http://www.et.uncc.edu>

The development of Laboratory Safety Analyses is a very effective means of helping reduce incidents, accidents, and injuries in the workplace. It is an excellent tool to use for training purposes and can also be used to investigate "near misses" and accidents.